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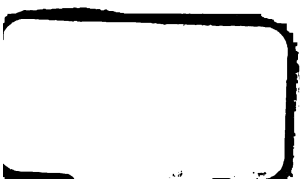

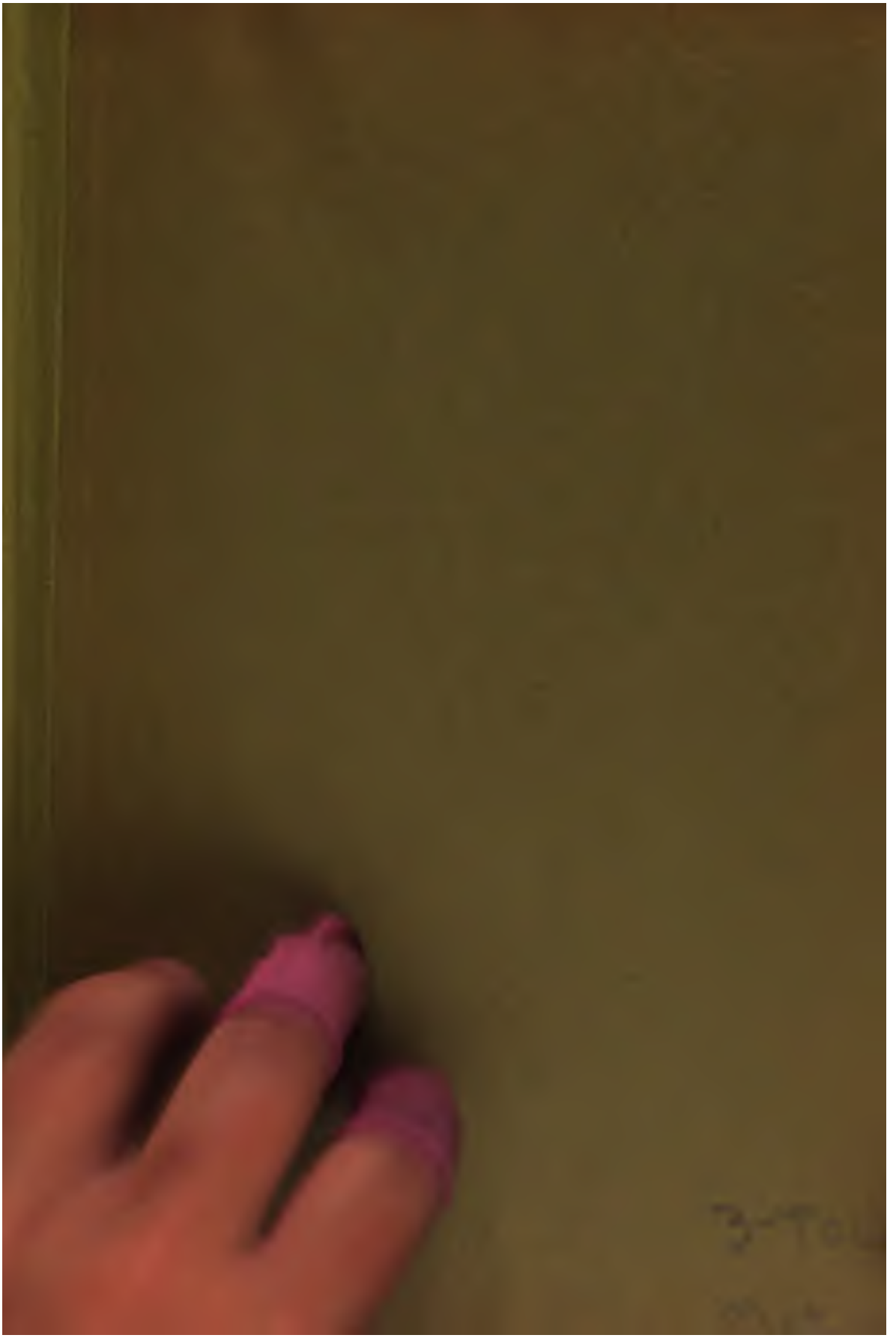

# MOTOR TALK

421814

## A Magazine of Outdoor Sport

## JANUARY 1905

*A palace car at your door—the*

# OLDSMOBILE

a Pullman that needs no track—a public utility for every avenue of business hurry. Always ready when you are—a race horse when you want speed—"Old Dobbin" when you halt by the way.

The Oldsmobile Touring Car, price $1400, is equipped with a 20 H. P. double opposed motor; cylinders 5¼ x 6 inches. Has side entrance, and is luxuriously upholstered throughout. Seating capacity for five passengers. Wheel base 90 inches. Speed from 6 to 40 miles an hour—with surprising hill climbing ability—noise of exhaust completely eliminated.

**Oldsmobile Standard Runabout, $650**
**Oldsmobile Touring Runabout, $750**
**Oldsmobile Light Tonneau Car, $950**
**Oldsmobile 20 H. P. Touring Car, $1400**

Send for "Book of Particulars." Address Dept. 50.

## Olds Motor Works, Detroit, U. S. A.

*Member of Association of Licensed Automobile Manufacturers.*

by Karl Anderson.
1905, Brownell & Humphrey.

# To Manufacturers

The *successful* marketing of your products involves, on the one hand, the creation and maintenance of a steady demand; on the other, distribution through an economical and efficient organization. The developing of new ideas in attracting trade, the *judicious* use of the right mediums for advertising, the ways and means of occupying and holding new territory—widening your market—are essential factors.

There are certain underlying principles in marketing goods which are as important as factory costs, and we understand and know how to apply these principles by our knowledge of sales conditions and keeping in mind the proper proportion between the various elements which enter into a manufacturing proposition.

We can help you to *know*. Take us into your confidence. We are using our practical knowledge of inside and outside salesmanship successfully every day in the interest of our clients.

Do not think that because we are advertising agents our prescription will of necessity be advertising. On the contrary, there may not be a dollar advised for newspaper or magazine expenditure. It may be a matter that can be best handled by a change in your selling methods. If you are not absolutely sure your sales system is right, if you are not getting results you ought to get, write to us.

Brownell & Humphrey

88-90 Griswold Street

Detroit, Mich

# Results Count.

AN uncalled for and useless controversy concerning circulation is at present occupying the idle time of the staff, business and editorial, of several Automobile Trade Papers. One minor weekly, evidently for want of matter of interest to its readers, sacrifices its editorial page to the burning question of advertising and circulation.

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AUTOMOBILE TOPICS having always considered, and still continuing to so consider, these questions as being merely advertising questions, has never imposed upon its readers by devoting its reading or editorial columns, which are always dedicated to our readers' interests, to these questions. AUTOMOBILE TOPICS believes in using its own advertising columns and the advertising columns of other papers to advertise its views regarding advertising and circulation.

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We believe in judicious advertising, and discriminating advertisers are always looking for actual RESULTS and nothing else.

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AUTOMOBILE TOPICS being a class publication, and not a trade paper, circulates among the users and possible buyers of automobiles; it contains real merit and matter which must be of help and use to the automobilist, present and prospective, and necessarily produces RESULTS to the advertiser.

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Alleged and mythical circulations of fifteen or twenty thousand copies in belated picture story books, is of no permanent or direct value if not associated with interesting and practical matter of the story of the day, timely told in a way which interests a man who is interested in the automobile.

The man who owns an automobile and the man who intends to own one, is certainly not the kind of man to be influenced in his views or decisions by any gift enterprise of something for nothing, or alleged voting contests, connected with subscriptions to an automobile publication.

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AUTOMOBILE TOPICS has never found it necessary to produce fake illustrations, and as it is a journal for the owner and novice, and not for factory operators, it has always endeavored to be elementary, rather than technical and severely scientific, preferring to convey to its readers everything that is going on in automobiledom in a thoroughly correct manner, described from an unbiased viewpoint, dictated by honest opinion and conveyed in well-written and lucid phrases.

---

Not only has AUTOMOBILE TOPICS a splendid circulation list, embracing the best possible buyers and users of automobiles, but it is the automobile paper which has the largest news-stand sale at home and abroad. This last statement of fact adding to its real value among the general buying public.

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A few of the manifold reasons why AUTOMOBILE TOPICS brings RESULTS are—Its articles on—

Preventives and Remedies, which plainly and clearly tell how to overcome and forestall difficulties which may arise in operating automobiles.

Touring and Outing Supplements every week with details in text and maps of routes.

Touring in Europe, being a splendidly illustrated continued story of a Summer abroad, delightfully told by a noted American traveller.

Every automobile event covered in text and pictorially by the best writers and artists in the field. Special departments of Good Roads, Clubs, Utility, Trade Notes, Foreign Facts and Fancies, a Weekly Letter from Paris, Sports, News from Mart and Maker, Boat Motoring and Society.

# AUTOMOBILE TOPICS

1440 BROADWAY, NEW YORK

**$2.00** Per Year. ON ALL NEWS-STANDS. **10** Cents Per Copy.

# MOTOR TALK

A MAGAZINE OF OUTDOOR SPORT

VOL. I. JANUARY, 1905 NO. 1

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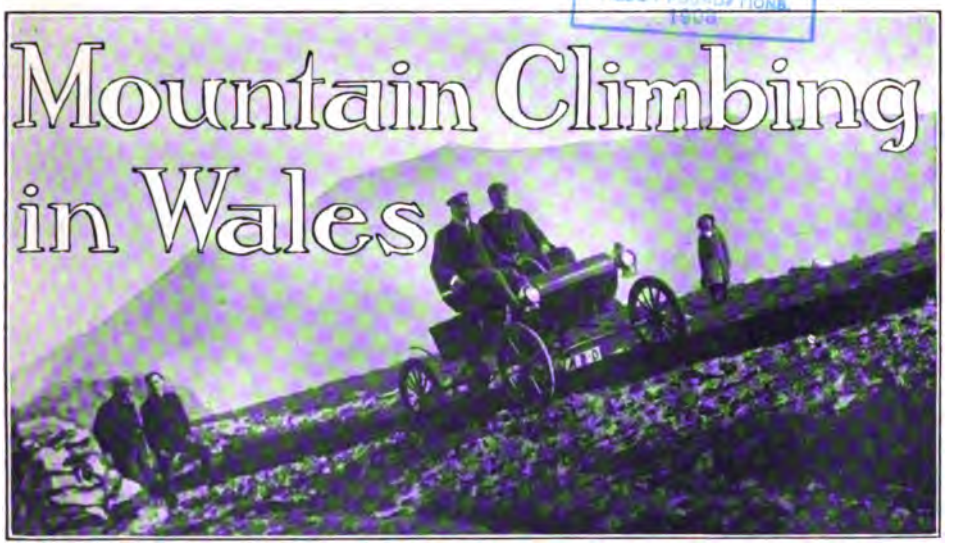



APROPOS the recent visit of Mr. W. M. Letts to this country, is the following account of his daring climb up Mount Snowden last summer. This account is taken from an English report of the event which was widely noticed in the British as well as the Continental and American press:

"After a creditable failure last January, Harvey du Cross, on a 15 h. p. English-made Ariel motor car, a fortnight ago conquered Snowden, the monarch of Welsh mountains, after a struggle extending close on four hours. Yesterday, June 6, Mr. W. M. Letts, of the firm of Jarrott & Letts, London, with an American made 4½ horse-power Oldsmobile motor car, absolutely squashed the Welsh monarch of mountains, rolled it flat as it were, under his chariot wheels, and turned it into an object of derision for all future motor cars of a respectable make by simply romping from base to summit of Y Wyddfa in the astonishing time of 57 minutes net. Mr. Letts was late in the field but it is interesting to note that so long as four years ago he had conceived the idea of riding a motor car up Snowden, and actually sent his friend, Mr. A. C. Slater, of Llandudno, who accompanied him yesterday, to take the measurements of the track up Snowden necessary in order to enable him to select a car of proper dimensions for the task.

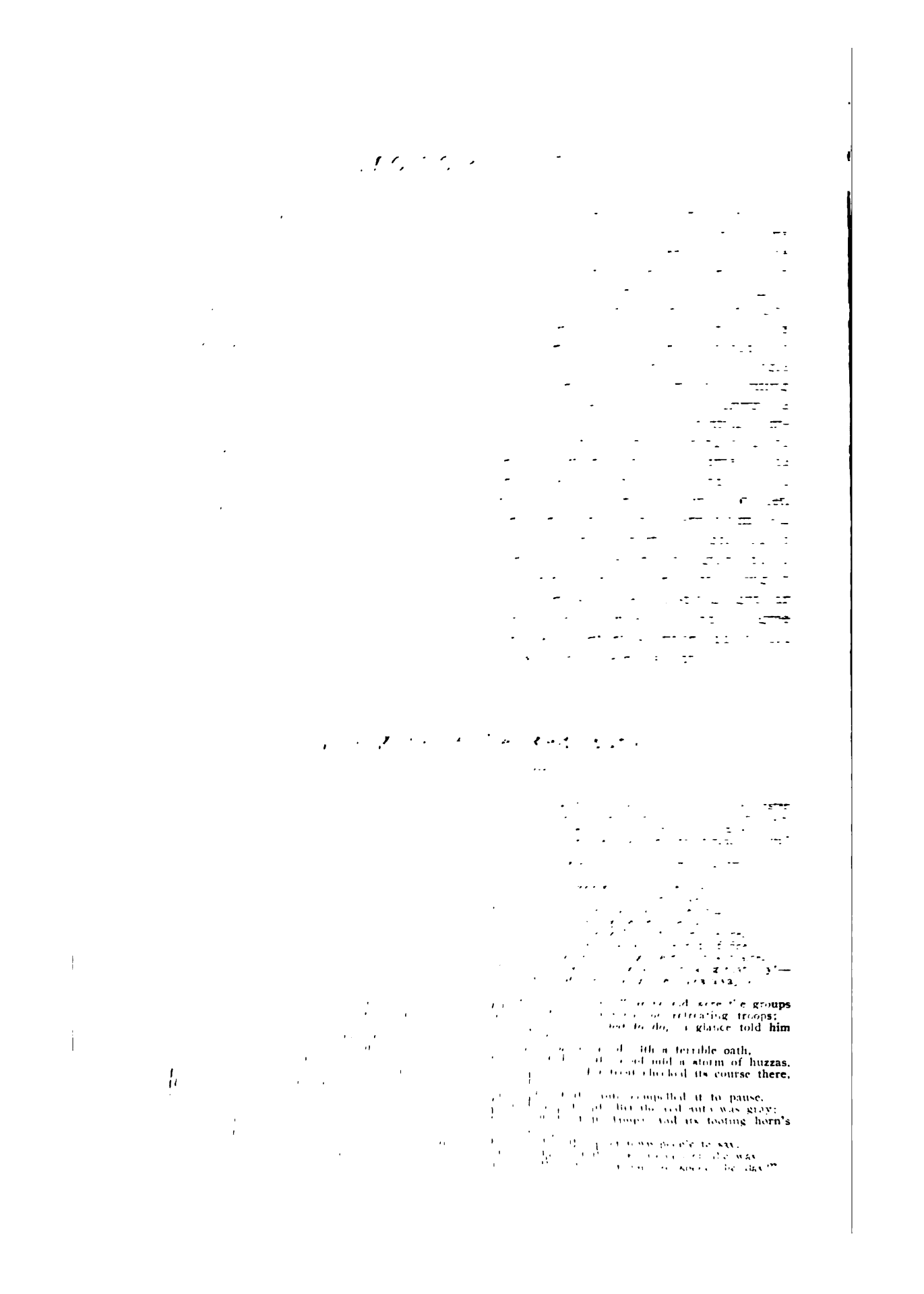
"However, owing to a prolonged visit to the United States, Mr. Letts lost the honor of being first in the field of mountain motoring as far as Snowden is concerned; but when he did turn up yesterday he established a record which will probably not be beaten or even equalled for a long time. Mr. Letts' car weighed 800 lbs., and carried three gallons of petrol and about four of water. It was

a single horizontal cylinder, driven with one central chain, and was the identical make of car which performed the sensational feat of riding up the Crystal Palace steps at Sydenham.

"The task before Mr. Letts was complicated by the extreme width of his car's wheel base, and by the position of the differential on the centre of the under side of his car. The position of the differential necessitated the striding of the 2-ft. 7-in gauge line of the Snowden Mountain Tram Road unevenly, as, had the motor car been placed evenly across the line, the differential box would have come into constant contact with the rack rail lying from beginning to end of the line in the centre of the gauge, and thus have thrown the motor off. The result of this uneven striding of the line was that while the wheels on one side of the car had ample room on the ballast on their side of the track, the two wheels on the other side of the car were preforced dangerously near the edge of the ballasting, a position of considerable risk, and one which almost led at one stage of the ascent to an accident the result of which one can only imagine. The car was stated by Mr. Letts to be an ordinary car taken out of stock and had not been strengthened or prepared for the trial in any way. It had previously been run on ordinary roads for about fifty miles.

"Mr. Letts arrived at Llanberis about ten o'clock on Sunday night by road in another motor car from Llandudno, and put up with his friends for the night at the snug quarters at the Victoria Hotel, occupied a fortnight ago by Mr. du Cross and his party. As Mr. du Cross had done, Mr. Letts obtained the permission of the Directors of the Snowden Mountain Tram Road Company to make the essay along their track, and Mr. Aitchison, the Company's Manager, attended the trial throughout. As before, a special train was chartered by the experimenters to follow the car as far as it went. A start was made half an hour earlier than Mr. du Cross started, and our correspondent was required to keep an exact record of the actual time occupied on the journey and also of the time taken by stoppages of every kind. The climatic conditions were equally as good as those which favored the du Cross experiment, but the final result was a revelation.

"Starting exactly at 6.57 a. m. the machine simply waltzed up the 1 in 8 gradient at the commencement of the ascent, and at 7.11 stopped at Hebron Station in order to be assisted over the crossing points there. In the case of the Ariel a fortnight ago, this operation necessitated the laying down of a number of planks, over which the car was carefully steered. The lighter weight of the Oldsmobile, however, enabled two or three of the men placed at Mr. Lett's disposal by Mr. Aitchison to lift the car clean over the points, and thus a great saving of time was effected. Just before the half way station the Oldsmobile came across some more points, but this time Mr. Letts, with the utmost nonchalance, simply rode his car through them without stopping or even slowing down. Mr. Aitchison, however, anxious less some of his points should have been deranged, stopped the special train for the purpose of examining them. A serious derangement of, or damage to the points might easily cost the Company some three hundred pounds. They were, however found to be practically intact, and



# *MOTOR TALK*

## With Stockholm's First Lady Automobilist

*Translated from the "Svenska Dagbladt," Stockholm, Sweden*

OUR times are under the sign of the automobile. The many automobile accidents and mishaps that have occurred in this and in foreign countries have not been able to prevent the number of this most modern of all vehicles from steadily increasing here in this capital as everywhere else. For a long time automobile driving was reserved for the stronger sex, and the members of the fair sex who were courageous enough to take a seat in an automobile did it only as passengers. But not even this domain, which was supposed to be exclusively reserved for men, could be defended against the female invasion, which is extending victoriously from one field of activity to another. Female chauffeurs are already quite common in foreign countries, and now Stockholm has also its first female automobilist.

The Stockholm that promenades has surely noticed a young and stately woman, who with courage and a firm hand drives her automobile through the swarm in the street in any part of the city. Most of our readers have already guessed that the lady of whom we speak is Miss Gjestvang, a daughter of Consul General E. C. Gjestvang, of this city. Her name is well known from automobile races and exhibitions by all who are interested in this sport, and even the general public knows her well. As it is very probable that her example will be imitated by other daughters of Eve and that we shall soon have a number of female chauffeurs, we took occasion yesterday to ask Miss Gjestvang about her first attempts and experiences as an automobilist. Miss Gjestvang received us in an amiable and frank way, entirely free from the embarrassment which generally characterizes young ladies and which, by the way, is perfectly natural when a person is interviewed for the first time. She was perfectly willing to give us all the information we wanted, though she explained that she had not very much to say. The first question was, of course, how and when Miss Gjestvang had got the desire to devote herself to automobiling.

"It was at the International Automobile Exhibition in the spring a year ago. I was a daily and interested visitor, and I had not had many rides in these modern and comfortable carriages, before it was clear to me that they were the vehicles of the future, and that they possessed great advantages compared with the old cabs drawn by horses. I was delighted with the automobile, and thoroughly enjoyed the delightful sensation of moving along with the speed of an express train among the ordinary carriages and pedestrians, indifferent to what is going on around me. Now, admit that my enthusiasm is natural."

We admitted that, and continued our questioning.

"A short time after the Exhibition I began driving alone, at the same time that my father got the general agency for some automobile firms."

"Was it not difficult to learn to handle and manage the machine, and were you not afraid at first?"

"Not at all. I can assure you that it is much easier than people believe to drive an automobile. After half an hour's instruction I rode alone without any trouble, and I have continued to do so up to date. I learned it at the "Djurgarten," but already the first day I rode alone in the streets, and now there is no part of Stockholm, where automobiles are allowed, through which I am afraid of driving."

"You have probably several times met with accidents, collisions, etc?"

"Not a single time. I have not once

been fined for exceeding the speed limit, though that is a usual occurrence among automobilists, and that in spite of the fact that it is my private opinion that you drive with greater safety the greater the speed is. It is, by the way, not at all remarkable that accidents do occur, for the conditions of traffic are miserable in Stockholm. Very often the chauffeurs do not cause the collisions, though they have to take the blame. If only we had a decent management of the traffic, which would enable us to drive our automobiles under tolerable conditions. We have the beautiful road around the "Djorgard," where I go almost every day. But in the streets of the city you meet all kinds of hindrances. The cab drivers continue not getting out of the way, delighted to be able to annoy their modern competitors, the chauffeurs; the pedestrians take a pleasure in crossing the streets in as long diagonals as possible, and the public in general is either unable or unwilling to look out, something you don't see in foreign countries. But in spite of that, accidents are in many cases avoided owing to the careful attention of the chauffeurs, which, if they had occurred, would entirely have been due to the public's lack of attention and dullness."

"What kind of automobile do you prefer?"

"Well, that is difficult to say. Every machine has its good and bad points. I learned first to drive an Oldsmobile, and since then I have a kind of preference for that machine. They distinguish themselves by their light weight and low price, about 3,500 kroner. That alone will guarantee them a great future. The machinery is also very simple, which I consider a great advantage, not yet being thoroughly familiar with the technical details. As a rule, the Oldsmobile is easy to start, but if I should need help at any time there are always spectators around the automobile who are ready to offer their services.

"The sympathy of the public is now already on the side of the automobile, and I hope this will more and more become the case. It would be strange otherwise for the automobile is nothing but an invention of engineering practically adapted to the use of mankind. But in order to secure for automobiling the great future which it deserves, rules are needed that will prevent arbitrary driving by persons who are not competent to handle an automobile without danger to the safety of the public."

"Though you are an automobilist yourself, you seem to be in favor of rules restricting automobile traffic?"

"Of course the chauffeurs must, like all other people, be subject to certain regulations in the execution of their work. In most foreign countries, among others, in Norway, everybody who will drive an automobile must pass an examination, after which he will receive a certificate from the authorities. Such an arrangement ought also to be introduced here to prevent all automobiling from getting into discredit owing to the actions of incompetent chauffeurs. Another matter which ought to be mentioned in this connection is the change of punishment from a fine to prison in certain instances. It has been stated in England and America that the fines which people who exceed the speed limit are sentenced to pay, are entirely ineffective as a punitive measure, if the person fined is a millionaire, as is often the case, or at least a person of wealth. Therefore, short terms of imprisonment for trespassing against the automobile regulations have been introduced in these countries, and it has already had a good effect. If the guarantees are sufficient, the rules relating to maximum speed can be made very liberal. Of course, special rules ought to be made for races."

"By the way, have you been present at any foreign races?"

"No, sir; sorry to say, not yet; but I hope next year to attend the Gordon Bennett race in France. In December I am going to visit the annual Automobile Show in the Grand Palais, in Paris.

At the same time I intend to frequent the automobile school at the Champs de Mars and pass the examination as a chauffeur, in order to be able to prove on black-and-white that I know how to drive. People take great stock in paper merits." And the brave young lady laughed ironically.

"Such a school could do no harm at home. Perhaps you are thinking of establishing one for female automobilists?"

"That I have not thought of as yet, although it is needed. And you may be quite sure that before long even the women will run their own automobiles. All that is needed is to have a few of them make a start. It is said that Princess Ingeborg takes lessons in automobiling at present under Prince Eugene's direction. In that case it will not take long before the society women will do the same, and I am convinced that they will prove just as good chauffeurs as the men."

We had not the courage to doubt this, especially as Miss Gjestvang, at the automobile races last spring would surely have taken the first prize, if it had not been for an accident. And at the automobile parade last Saturday she got, as everybody knows, the highest number of points. Great results can, therefore, be expected from the female competition. A few words more about the future of automobiling in this country and we departed, after having received from Miss Gjestvang the kind offer to instruct us practically some day in the art of automobiling.

## Motoring In and Around Paris

FRANCES IRVIN, writing for the *Illustrated Sporting News*, paints a delightful word picture of the environments of the Parisian automobilist.

"Leading out of Paris are the great routes nationales, direct to Havre, Brest, Reims and Lyons. These straight, broad roads, laid flat, as a rule, across France, are kept in repair by a national fund. The routes departementales, also excellent highways, are repaired by the various departments. And below these are still other divisions for the sake of convenience in systematic repairs. Of recent years the Touring Club has spent large sums on road-mending in its own interest. The automobiles do much damage, the suction of the tires in rapid motion tending to loosen the roadbed.

"The difficulty of automobiling near Paris lies only in the selection of a route: c'est l'embarras de choix! Touraine with its broad level country and gently rolling stretches, the wealth of history and glory of architecture in its marvelous old chateaux, is now a familiar field to many. One skims between wide arches of purple grapes ripening in the sun, or by the banks of the Loire, the Cher, the Indre, the Vienne—those dreamily flowing rivers that water this 'play-ground of the kings of France'—or puts up for the night at Tours, Blois or Chinon, the oldest and most curious town in France, where Joan of Arc came to confront Charles VII.

"Through Normandy, Brittany and Basse-Bretagne with its brilliantly costumed peasants, to Quimper and Brest, one may travel easily and readily, whereas in former days the undertaking seemed formidable.

"But in the vicinity of Paris the automobile has made possible in a day what used to mean several tiresome trips by train. Fontainebleau is forty miles by railroad, somewhat more by road. A start at 9 o'clock from Paris takes one past the Pantheon, out of the Porte de Choisy, past the octroi official who gives his searching glance at the gate. By some unwritten law of autoists, naphtha is purchased outside the city gates, as it costs two sous less per lier than in the city. The road leads past Choisy le Roi, where Louis XV built himself a sort of pleasure pavilion, past little towns where flowers and vegetables are grown for Paris, and through a wavering green country. Over miles of the straight, broad roads laid out by

Napoleon one may with safety go at speed, with a vista of perhaps three miles ahead through the poplars and no fear of turn or obstruction.

"At last one turns into Barbison, the historic colony of painters; a long street bordered by houses half hidden in their deep gardens, here an inscription to Millet, there a memory of Rousseau, Dupre, Carot, of Rosa Bonheur and her hardworking life, sweetened by the affection of all who knew her. At the end of the street is the tall, cool dimness of the forest of Fontainebleau. A short spin brings us to the palace, and opposite, in the charming hotel, one lunches amid a score of pleasure parties. And then there is time to explore the palace, from whose stone steps Napoleon bade adieu to the Old Guard before his exile.

"But the auto reveals to us the charms of the forest, fifty miles round, the largest and most beautiful in France, too vast to explore in any other way. Its deep green glades with dancing shadows, and ghostly echoes of royal hunting parties of long ago, its wonderful weeping rocks, the high point of vantage in its center with a view of all the country around, the giant oaks, and a wild moor swept clean of all verdure by fire.

"Then back to Paris toward sunset. Here and there as we speed along a friendly bicyclist warns us that a gendarme lies in wait a little farther on; but we are cautious, and out for pleasure, not for record-breaking.

"Paris is reached about 7 o'clock, the Pantheon looming high as we approach, having covered something over ninety miles, and had several days' pleasure crowded into one.

"From Paris to Meulau, to reach which one passes through the Bois near Longchamps, and through Saint Germain, is a run of something over two hours, through a beautiful country, rich in trees and farms, a revelation to one who knows only the nearer environs of Paris. The Seine is wide at Meulau, and offers a sailing stretch of six or seven miles, so that a yacht club has its quarters here and a fleet of sailboats ride at anchor. The regattas are very pretty to see. There are several inns, and a good lunch may be had. Then back again to Saint Germain, stopping for a stroll on the celebrated terrace in front of the Chateau with the sweeping view of country and of Paris, and behind the enchanting forest. And to crown this day of rapid flight, on which we have not even a bruised tire to record, tea at Versailles.

"The courtyard of the Hotel des Reservoirs is full of panting and rattling machines and restive horses, all getting in each other's way. Fellow-autoists whisk off a layer or two of dust and shake hands. A man to whom one has hesitated to bow, not feeling sure of the identity of his disguised lady friends, bids them remove their headgear, and we discover his wife and daughter. In summer the terrace of the beautiful hotel, looking on the broad avenue that leads to the Palace, is crowded with tea-drinkers, many the élite of Paris; there are flowers and gaiety, and constant departures and arrivals.

"There is time for a stroll about the grounds of the palace, and then a flight for home, winding along the river with a view of St. Cloud opposite set in its mass of green; and then we flash through the Bois at its most crowded hour, and down the Champs Elysees, that bewildering kaleidoscope of human life.

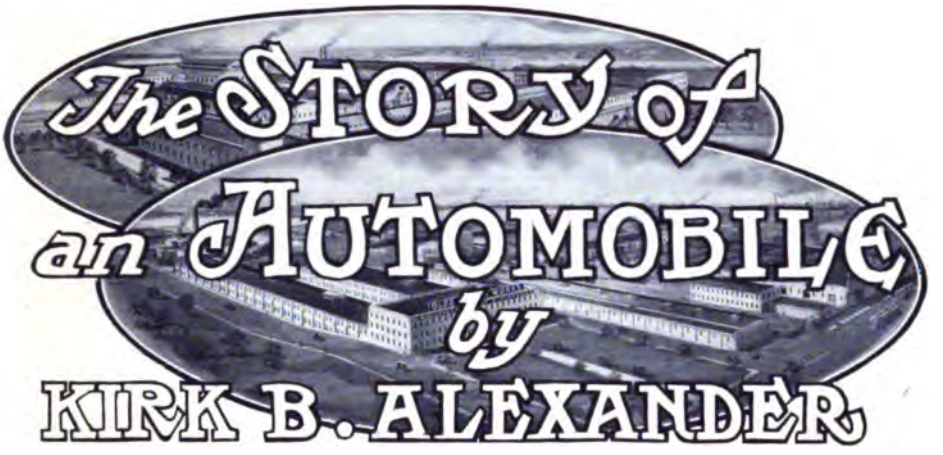
"It takes a man of nerve and promptitude to drive an automobile in Paris. The speed allowed is far faster than ours at home, even within city limits, and laws are not enforced. Changes may be hoped for here, where the toot-toot of the auto horn is the all-pervading sound. and sisters, cousins and aunts are taken out on Sunday in the worthy townsman's auto, riding on an improvised seat over the generating oil.

"The Panhard is doubtless the favorite machine, although the Georges-Richard, and now the prize-winning Richard-Brasier, keeps it close company.

"The speed allowed in Paris is 20 kilometers an hour; in the country—c'est ce qu'on veut!

"This latitude given automobile devotees is taken full advantage of, and the long, straight roads, comparatively free from horse-drawn vehicles, allow very high speed with comparative safety.

"The delight of pausing for a moment on the crest of a hill, such as one ascends on the road leading to Orleans from the south, seeing the straight, white ribbon stretching away for perhaps ten miles, without a perceptible obstruction, then dropping down the long slope to meet again a gentle rise and fall in the road, is an exhilaration which can seldom be met with."




HAD Phaeton the facilities for providing himself with a reliable gasoline motor, there is every reason to believe that his spectacular performance with the paternal chariot might have come to an unpoetical twentieth century, shorn of many picturesque features. The abruptness with which the automobile has preempted a place in modern society has left us little leisure in which to contemplate the completeness of the revolution. The part that the automobile might have played in history—had mechanical acumen come along with the stone hammer or even with the Greek javelin—makes interesting speculation enough.

Ancient history affords a positive exhiliration if we can but picture the stately and coquettish Cleopatra coming to Anthony, not in an unwieldy state barge, but dashing up, blushing and debonair, in a well-appointed tonneau car. How much more imposing—not to say effective—Alexander of Macedon would have been with his sturdy patriots had he but led the onslaught upon the Persian hordes in a rakish runabout! How much more sportive the chariot races in the arena would have been, had the long-limbed Arabian runners early given place to the "Scarlet Scourge," the "Arab Demon" and the "Black Blight," the space annihilators of those turbulent days! Heigho! think of the vast corps of priceless opportunities that history has left unplucked for lack of the enterprising automobile-makers who bring joy to the heart of the bucolic and the magazine publishers today. We can conceive in the rays of this searchlight Pegasus himself folding his azure wings in deep dejection and stealing back to the sequestered font of poesy, a discredited and outfooted muse.

In the virile, if odoriferous, explosion of the gasoline motor there is more potential imagination than in all Pegasus' tuneful snorts. The automobile, in moving the world along with a jerk, has pushed history a bit further back on the dim road of antiquity.

So suddenly has it all come about, that we fancy the automobile of today in all its mechanical perfection, has sprung up like a luxuriant orchid, in a night. At least we are quite content to accept the conveniences, the comforts, the delights, the saving of time in transit. We adjust ourselves to revolutions these days with a comfortable adaptability. And that's quite right, for it is a by-product of the spirit that made the automobile an actual accomplishment. But it is curious how quickly and comfortably we settle ourselves to the new conditions.

We do not include in our view of the finished automobile the achievement of

the pioneer, who has been toiling these years in grime and oil and the cinders about the forge and the lathe and the drill, to put his imagination into cold steel and wrest from the keeping of natural forces the secret of the automobile. This man we forget. We forget his dreams, his hopes, his bitter disappointments, and his dogged persistence. We know only of his victory, and with that we are content. For such is the way of the world. We all have our troubles. Congratulations we are pleased to share on a co-operative basis.

And so the phlegmatic most of us are accustomed to contemplate the facilities and equipment for making automobiles with the same light-hearted indifference. The shop, foundry, and factory grew like Jack's beanstalk. And the automobile. We woke up and found it. Just as soon as the bricklayer picked up his trowel and the painter his brush, capital moved in deliberately and decorously and started in making automobiles without having previously given the project a vexatious thought. This is a fallacy which some of us have. At the risk of branding ourselves too serious-minded we shall set out to correct it. True, the automobile has been conceived and perfected in the life of a good, sturdy running horse. But those few years have been pregnant with both efforts and results.

There are many huge plants in the country making automobiles today that have, it is true, sprung up upon weed-grown lots with almost the magic of Aladdin's lamp. We have neither the space nor acute public spirit to make even a cursory examination of all of these. But it is our purpose to chronicle an expedition through the mammoth plant of one concern that is turning out fifty automobiles daily; which has grown to enormous proportions through a demand for its cars that baffles the exertions of twenty-four hours of continuous work. It requires both diplomacy and self-control to propitiate the customer who orders six machines and must be content with one. Such, however, are the conditions with which this concern has to contend.

A trip through the two huge plants of the Olds Motor Works, one in Lansing and the other in Detroit, Michigan, impresses one with the spirit of feverish endeavor that the whim and will of the American people can evoke. It brings home to the layman the infinite mechanical detail that enters into the construction of every successful automobile. When one reflects that there are approximately 1,300 distinct parts in an Olds machine, and that each part must move in faultless unison with its 1,299 relatives, one gathers some conception of the intensive efforts of the work.

As the Detroit plant of the Olds Motor Works makes tonneau cars and touring runabouts, and the Lansing branch, the world-famous Oldsmobile Runabout exclusively, it is necessary to treat them separately. And a very merry jumble would be the mind of the layman who had the supernatural privilege of visiting them simultaneously.

It was the privilege of the writer to embark upon an expedition through the Detroit plant of the Olds Motor Works in the early morning, when the 750 men employed in this plant were gathering at the gates, their lunch boxes in their arms. And the writer issued from those same gates with the workmen when the 5:30 whistle had sounded the close of the working day, and much splashing in Detroit river water and castile suds had washed away from their faces and brawny forearms the delectable grime of toil. Nine hours precisely were consumed in that tour through a forest of laboring machines, and the ranks of the proud army of American labor. It is a confusing mass of impressions that one gathers. One needs to let days intervene that one may look upon the formidable array of facts with a longer view and a larger one to get the perspective. To the layman it all seems chaotic. But it is the acme of orderly science, as we shall attempt to make clear.

# *MOTOR TALK*

**A Corner of the Vast Machine Room.**

It appears logical—if to the mechanical mind, unprofessional—to tell in outline those four departments of construction through which the automobile must pass, from the mere sand-studded castings to the finished machine, needing only the touch of a lever to spring into life and its own power. Out of the blacksmith shop and into the machine shop are brought the bare angle-iron frames upon which the engine is to be built. Crank-case and cylinder castings, too, begin their genesis in this machine shop, where each is prepared for its proper place and function; where every detail of the engine, every fixture is machined. Then comes the Assembling Room, where these thousand and one parts are brought together. Here parts are adjusted. Here motors are given their vitals. Here the engine of the automobile begins to take form.

When the engine has been fully assembled and needs but the vital parts, such as carburetor, battery and sparker, and water and gasoline tanks, it begins a new period of construction in the Erecting Shop. Following that is the Testing Department, with its trying-out, practical and exhaustive. Then the ornamentation with new wooden body, cushions, mudguards and bright work. At last, having proved its worth and temper, step by step, your automobile is ready for the shipping room, where hundreds of its contemporaries are waiting their turn to make their debut in the automobile world.

These four main divisions, Machining, Assembling, Erecting and Testing, will subsequently be treated in more detail.

We shall start at the point where the automobile itself starts the cycle of its mechanical creation—that is the place, well down toward the shores of the Detroit river, where freight trains—on the firm's own spur—are constantly puffing and complaining shrilly of an over-load of the automobile's bone and sinew.

From these trains castings from the firm's foundry at Lansing are being unloaded in quantities that would make any right-thinking switching-engine complain. Sometimes there are but 500 castings and again there are as many as 5,000. And the castings of an automobile are not attractive, and give no promise of the useful life of labor and frivolity that is in store for them. Here also arrives the raw material of all sorts, whole cars full of it, often to the number of 10,000 pieces a day. Here's where the imagination of your designer and the dreams of your engineer begin to take a tangible form. A very busy place is this private freight depot, for the anatomy of an automobile is a complex thing, and its vitals come from many and remote parts of the country. From the freight car to the "pickling vat" is the logical course for these recruit castings, and there is no connection with a medical school, as the term "pickling vat" might unhappily imply. Here in oil of vitriol the castings-cylinder and crank-case, are treated to baths which might reasonably be expected to remove all traces of travel, even their sandy origin. They come forth ready for the first crucial test of their fitness. And that is a thorough one. Defective castings by the hundreds daily are tossed back on the junk pile, to be melted up and born again.

The first glimpse that one has of the machine's actual creation within this wilderness of shops, is the blacksmith shop, where a score of men are busy upon the real skeleton of the Olds tonneau car. That is the shaping of crude and unpromising looking strips of angle-iron into the frames, oblong in shape, for the engine and the body of the car that is to come. In this forging room there are at work plodding steel hammers exerting a crushing force of 2,000 pounds to the square inch. Here forges with sullen glow are shaping many of the simpler parts. Here also the case hardening is done for steel that is of too soft an exterior to meet the blows of a hard, commercial world. Here is the annealing process also to break the spirit of steel that yields with bad grace to the advances of avaricious man. Not far from the forge-room is a brick building in dignified seclusion, in which the enameling is done.

But we are straying from the eventful path that leads to the completed automobile. If one follow hard upon the clean and perfect castings—for the cylinders have already been tested hydraulically—one comes to the vast Machine Shop, which stretches away interminably in what at first appears to be a hopeless confusion of grinding lathes, whirling belts, and an army of grimy men. When one is informed that in this one gigantic space four hundred men are at work, each with plenty of room for his machine and his manipulation of it, one is convinced that the impression of space is an actuality and no illusion. It would be impossible in this connection—and probably mean nothing if accomplished—to detail the infinitude of tasks and detail that is being done by these 400 men. Here the cylinders are given their first lessons in the functions of useful members of the automobility. They are bored in pairs by special two-spindle machines, and if found perfect, carefully lugged away to the stock-room to await the next step in their creation.

Here there are jigs (not extemporaneous vaudeville performances) for turning up crank shafts. This device is an inventive product of this plant and permits three tools to make as many cuts at the same time. There are lathes at work facing off castings. Great turret-lathes of almost human sagacity turn parts with seeming nonchalance, but a deadly accuracy. There are titanic automatic lathes and patient threading machines. There are machines cutting key-ways and gears and sprockets, which last, by the way, is a task that is done upon whole companies of sprockets at once. There are regiments of drill presses. Gang drills are working in full company upon a single sprocket, five

holes being bored simultaneously. Thread cutting machines are dropping their bolts into a bucket with the patter of summer hail, but far greater regularity and fruitfulness. There are polishers, gear-shapers, planers, key-seaters, punch-presses, until the mind of the bewildered layman reels before this tremendous ex-

Machine making three differential gears at one operation.

penditure of mechanical energy and human invention—all shaped for that which whirls the world to its work and its play—the finished automobile. Clearly then the task of annihilating space, one feels, was more than a lightning flash of inspiration. There are precisely 181 machines at work in this shop, with 400 men to operate them. The mere item of thread-cutting oil here aggregates 50 gallons a day.

And the power which drives this vast array of mechanism is to be found in a formidable battery of gasoline engines, constructed at the Olds Gasoline Engine Works at Lansing. These engines, reenforced by a 1,000-kilo watt machine, furnish the plant with its complete lighting system, which is no small task in itself, when one reflects that an insistent market demands 24 hours of work in the day. Coupled with this lighting system is a combination switch-board, which permits the throwing in, in case of accident, of the city's Edison service, a three-wire system. There is also in this connection a huge electric welding machine with an alternating current of 300 volts and 50 amperes.

Here again we stoop to the futile argument of figures to convey an idea of concrete size. To feed these energy-making monsters, a ridiculously small amount of fuel is used, when contrasted with their work. Truly an insatiable thirst goes with even inanimate labor.

One's attention is inevitably drawn, during the long tour of this great room, to a section of the floor-space, fenced off by a wire screen from the rest of all this bustling activity. It is generally found that all expedients in these works are backed by tangible and unanswerable arguments. This wired enclosure contains some score of the best skilled workmen of the shop, men whose intelligence, experience and deftness of finger have marked them out from their hundreds of fellows. Here the nicest manipulation is required, for in this enclosure all machine tools for special parts and fixtures are made from the designs that come down from the draughting-rooms above.

Treading through long aisles, one cannot but be impressed with the degree of intensive development of this division of labor, which industrial society has evolved for its own good. We have a machine that bores cylinders unceasingly, without the deviation of a hair's breadth in a year's work. We have in its neighbor a machine that cuts bolts literally by the bushel. Both are driven by those unseen gas engines. They are making widely different parts of a widely different usefulness. And yet when the time comes to assemble all the thousand and one parts, the fruits of these inanimate slaves, which man has devised, will have produced for the harmonious whole the factors large and small that must and do work together in a unison that is the closest conceivable thing to a man-made perfection. Mathematics and skillful fingers allied produce marvelous accuracy.

*(To be continued.)*

Automobiling in Ceylon—just outside Colombo.

## Free Stone for Good Roads

WHAT is known in the United States of America as the "good-roads movement" is producing enormously valuable results wherever it has been instituted. Its purpose is gradually to establish a vast system of improved public highways throughout the country, thus affording easier means of communication between producers and consumers, facilitating the delivery of mails and affording fine routes for the prompt movement of troops in case of military emergency. In many States this project receives direct State aid, varying from one-third to three-fourths of the whole cost of road construction. Under this arrangement the State of New Jersey has already built about 1,000 miles of road, and the States of New York, Massachusetts, Connecticut and Pennsylvania have each built about 500 miles, while several thousands of miles of additional highways are projected. It is intended in several States that the crushed stone required in building these modern roads should be prepared by the convicts confined in penal institutions. It takes about 2,000 tone of crushed stone to make a mile of good macadem road. If this stone were hauled by the railroads from the penitentiary quarries to the places where it is needed, the average haul would not be more than 100 miles, and the roads could well afford to make a rate of 50 cents per ton, or $1,000 for freight charges on the stone needed for each mile of road. The rate mentioned would be about half a cent per ton mile. The railroads make much lower rates on wheat and coal and other bulky commodities. Every railroad benefits by the building of good roads in its territory, and there is no doubt that traffic managers would take a liberal view of the proposition and make rates that would barely cover the cost of hauling the stone.

"If the State furnishes the stone free of charge, on board cars at the penitentiary quarrying and crushing plants, the counties would get stone by merely paying transportation charges, which would not exceed $1,000 per mile. The work of road improvement should be carried outward from railroad stations anyway, and the teams that haul the stone out would travel on good roads and their traffic would help to roll the stone into

a smooth condition. In a level country the entire cost to the county ought not to exceed $4,000 per mile, and might be less. An expenditure of $50,000 per year in an average county would begin to show results in a few years, especially in counties where the traffic centralizes in the county seat. There are enough convicts in every State to furnish the stone, if they were put to work with modern stone-cutting machinery, and it is better to employ them on a rock pile than to have them competing with free labor in industries whose product must be sold in the open market.—*American Exporter.*

## Laying Up a Car for the Winter.

**Herbert L. Towle in *Outing*.**

BEFORE attacking the working parts of the car, it is well to remove all loose parts and accessories, such as the horn, lamps, baskets, floor mats and spare parts. The lamps should be emptied of carbide or oil, the oil lamps washed with gasoline and the bright parts polished. The horn may be polished also, and the floor mats cleaned of oil so far as possible, as oil soon ruins rubber.

Next to be considered are the tires. A common, but shiftless and wasteful, practice is to leave the tires on the wheels, merely jacking up the axles so that they may be deflated. When tires are left on the wheels, the inner and outer tubes are liable to stick together, and the rubber may crack and rot, especially if exposed to warmth or sunlight. The body should be jacked up, preferably under the frame, so as to relieve the springs, and the tires taken off. Clean the cases or outer tubes, and examine both the cases and the air tubes for cuts and leaks. Repair these carefully, as directed by the makers, and wrap the inner tubes in French chalk or flour of sulphur, folding them loosely, not creasing. Wrap the cases in cloth, and put all away in a dark, cool place. If the treads are worn down so that the fabric is exposed, the cases should be sent to the makers to have new treads vulcanized on, assuming that they are otherwise in good condition. This must be done as soon as the fabric shows itself, as otherwise the fabric will rot and be impossible to repair. Next to depreciation, the tire bill is the largest item in the expense account of the average car, and it is well worth while to give the tires all needful attention.

Empty the water and gasoline tanks, and see that no water remains in radiator, pipes or cylinders to freeze and make trouble. Empty the carburetor, flush it with gasoline and see that no water gets into it during the subsequent processes.

Take off the drive chain and clean and oil the bearings. If the balls and cups are worn, take out the balls and examine them and the cups and cones for wear, using, if possible, a micrometer to caliper the balls. If the balls in any bearing show the slightest signs of wear, replace the whole set in that bearing, being sure that the new balls caliper alike within one-half of a thousandth of an inch. Ball bearings should be packed with grease or vaseline, rather than oiled, and should run very slightly loose.

Drain all oil from the motor crank-case, from the gear-case and from the oil cups and tanks. Squirt kerosene into the motor cylinders and crank the motor rapidly by hand, with the spark plugs out to relieve the compression. This cuts the oil and half-burnt residuum from the cylinder walls and piston rings. Flush the crank-case and gear-case with kerosene, and remove any accumulated dirt. Pour kerosene into the oil cups, etc., and see that it flows or is pumped to all the bearings. If it fails to reach any bearing, it may be that the duct is stopped by dirt or waste. Investigate and remedy. If the shaft bearings are oiled by splash, squirt kerosene into them freely. If you know your car, you may take the shafts out for inspection, but the novice will find this a troublesome job. Planetary gears may be flushed with kerosene, unless they have rawhide pinions, in which case they should never be touched with oil or other liquids. If wick feeds or wipers are used, wash them with kerosene or gasoline.

When the motor and gear-case have been cleaned, oil them with small quantities of the lubricants proper to each.

If you have a steam machine, the scale inside the boiler may be softened with kerosene by first filling the boiler nearly full of water, when cold, then introducing about a pint of kerosene, then running off the water slowly. As the kerosene floats on the water, it will reach all the scale in the boiler from top to bottom. The boiler should be left full of water, not empty. The burner, pilot light and vaporizer should be cleaned inside and out.

# *MOTOR TALK*

Drain the differential case; wash it with kerosene, and oil afresh, as above; and apply the same treatment to all the bearings in steering gear, countershaft, control mechanism, etc.

Disconnect the batteries and clean the electrical apparatus as may be needed. Storage batteries should be fully charged and given a small freshening charge about once a month, when not in use, or else should be slowly discharged and the plates washed, dried and laid away. The former treatment is preferable. The batteries, whether dry or storage, should be left in a cool place, and if they are removed from the car one should not forget to tag the various wires.

Finally, give the body and running gear a good cleaning, which for the body may be followed up with a very little furniture polish or boiled linseed oil and a thorough rubbing with dry cheesecloth or chamois. Polish the bright parts about the car, and grease the iron parts freely with vaseline.

Treated as above, your car will stand through the winter or through the year without deterioration, and will be ready for business as soon as the tanks are filled.

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PRIZES are offered to inventors by a German government commission for mechanical contrivances indicating the speed of motor cars. It will be made compulsory for owners of motor cars to equip their vehicles with the mechanism selected by the commission as the most suitable.

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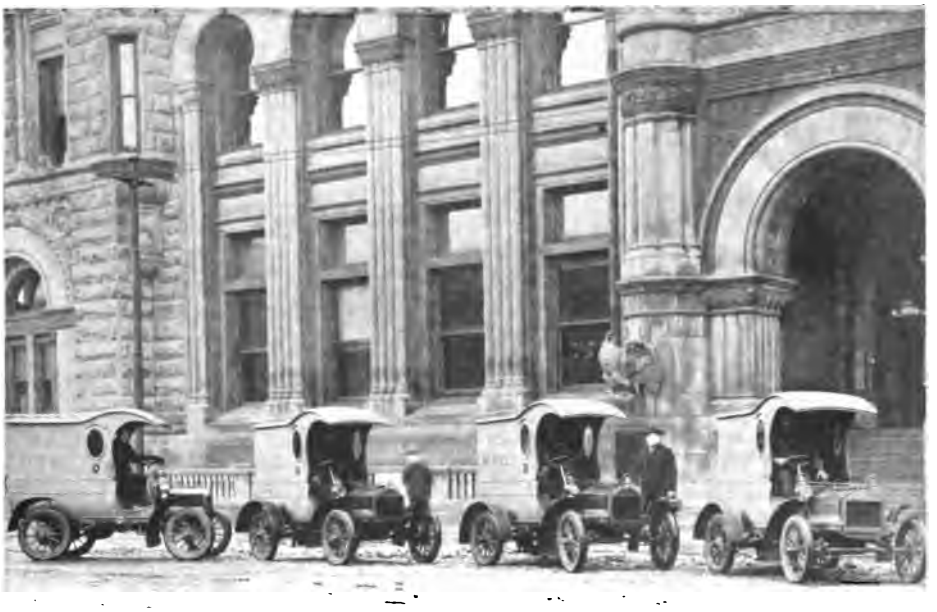
SEVERAL American cities are using automobile vehicles for police patrol service with great success. One claim in favor of the automatic police patrol wagon is that prisoners thus conveyed to station houses are more secure against mob attack than when carried in horse-drawn vans. The mere fact that the automobile is dependent not on horse-flesh, which is liable to give out, but on mechanism which is certain and can also attain a speed which would strike terror to the hearts of the average mob, are two great elements in its favor.



Uncle Sam's Christmas Present to the Detroit Postoffice.

# MOTOR TALK

## Notes on the Paris Salon—1904

*By F. L. Smith.*

IN the Paris Automobile Exhibition just finished the American visitor at the outset was overwhelmed by its splendor as a whole—by the lavish displays and consequent lavish expenditure of money to make the event a world-wide attraction, relying not altogether upon the "automobile curiosity" of the crowds which thronged the Salon. French art and Parisian lightness of touch were seen everywhere in the matter of draping and decorating the building, festooning the approaches with thousands of incandescent lights; and high art was displayed in the individual treatment of the booths where the various manufacturers exhibited their goods. Nothing like it was ever seen in this country in the line of an Automobile Exhibition, and it is doubtful if anything will ever be carried out in America on the magnificent lines of the Paris Show.

When the glamour of the first two or three visits to the Salon had worn off the visitor began to ask himself regarding the wherefor of all these externals and devices for arresting and fascinating the eye—if the automobile itself was *the* thing he came to see? The answer to the query gradually assumed the shape of a mental assertion that the auto itself had remained in very much the same stage of evolution that had characterized it during the Salon of 1903, and the "side issues" helped largely to attract visitors—in other words, there were to be seen no striking or vital changes in methods or general lines of construction, with the logical and inevitable corollary that the manufacturer must needs supply the "talking points" by dint of much polish and brass, much adornment and decoration of booths and an unrestrained license in the matter of lights, flowers, palms, etc.

This remarkable photograph was taken in Honolulu on

# *MOTOR TALK*

The American manufacturer is led to believe for a moment that the automobile art in France has "struck twelve," and that French ingenuity is at least partly exhausted in the rapid and wonderful progress which the automobile has made in France since its modest first start. In any case the American manufacturer cannot but be heartened by the knowledge that our own cars have come up from behind and are neck and neck in the back stretch with the best that are produced abroad. It is an astonishing fact, but a fact nevertheless, that American cars of certain types are selling everywhere on the continent today at prices largely in advance of the prices received in the American market, and that comparison is freely and often made between similar grades of French and American cars from the Runabout up to the high-powered multiple cylinder motors, without the least detriment to the American car. No one for a moment would think of belittling the place that French brains take in the early stages or in the final work-out of this tremendous industry, nor would any American have the effrontery to say that the French engineers and inventors were falling behind in the race. It is clear, however, to any unbiased observer that the American machines after the first two years of experimenting and uncertainty have adopted the best practices to be found anywhere and have bettered them in some cases and invented new devices and improvements on their own account.

The Paris Salon is an object lesson in a hundred different ways to one who has the least interest whatever in automobiles. The healthy and sure promise of a business settled down on sane lines, is written all over the Exhibition itself, and the intelligence and character of the inquiries made at the various booths demonstrate at once that the buying public itself has absorbed enough mechanical knowledge to at least talk well and understand automobile points and values.

For the rest, it is interesting to note that no other nation on the earth could bring order out of chaos over night as was the case in the last Paris Salon, nor could any other nation on earth be

hanksgiving Day, 1904, during the Flower Festival Parade. Photo by Rice & Perkins, Honolulu.

counted upon to turn out such cheerful and well-behaved crowds and to present to the astonished "backwoodsmen" from the United States the spectacle of such uniform and unfailing courtesy and politeness. America has more to learn as to the proper manner of conducting a similar Exhibition than it has of proper construction of automobiles, and inasmuch as the American makers have themselves worked out of the experimental stage and settled down to real and respectable business, it is well for the manufacturers who have goods to exhibit at the Madison Square Garden to take a leaf out of the Parisian romance of management of the last Salon for the everlasting comfort and benefit of the thousands of visitors who will be mauled and crushed and confused out of their usual senses at the coming Madison Square Show.

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EDITOR'S NOTE.—The Seventh annual Salon de l'Automobile du Cycle et des Sports was held in Paris, Dec. 9-25, 1904. It occupied two large buildings, the Grand Palais in Champs Elysées and the Serres de la Ville in the Cours La Reine.

## Won 100,000 Franc Wager

Maurice Fournier has just completed a "Tour of Europe" in an Oldsmobile Standard Runabout, winning the wager made between Henry Fournier, the Director of the Paris Automobile, and A. Dertelle, the wealthy sportsman. The distance of 4000 Kilometres was completed on scheduled time, the route passing through Bordeaux, Marseilles, Genoa, Rome, Venice, Buda Pest, Vienna, Dresden, Berlin, Hamburg, Amsterdam, Brussels and Paris. On their arrival in Paris, Maurice Fournier and Mr. Ashley, the English mechanic who accompanied him on the trip, were tendered a grand reception.

Automobiling in India—A Picture that Tells Its Own Story

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# MOTOR TALK

A Magazine of Outdoor Sport

PUBLISHED AT

DETROIT, MICH., U. S. A.

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## Editor's Talk

A few words about MOTOR TALK—its reason for being, its object, its motives, what it hopes to accomplish. MOTOR TALK does not seek to enter the field covered by the automobile trade papers, but rather to appeal to the automobile layman—the man or woman who owns a car or is going to purchase one shortly, and is therefore naturally interested in motoring, not only in respect to one particular make, but following automobiling as a sport or pastime, interested in a chronicle of events and happenings.

MOTOR TALK wishes to stimulate interest in, and create enthusiasm for, the sport of the horseless carriage. It will support all worthy efforts for the improvement of roads. It will advocate the advantages of proper regulations regarding speed limits; it will recognize equally the rights of pedestrians and horse-drawn vehicles. It will discuss the uses of the motor car, both as a pleasure vehicle and commercial utility. It will not accept paid editorial write-ups, but on the other hand, will willingly, in the interest of its readers, take notice of any improvements in automobiles, tires or accessories which it believes will interest its subscribers. MOTOR TALK will be edited strictly in the interest of its readers.

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The peculiar advantage of our location at the heart of the automobile industry of America is significant. The report just issued by the chairman of the Executive Committee of the Board of Commerce places the total output of the Detroit automobile factories during 1904 at not less than $10,000,000. In 1001 the automobile industry was repre-

in this city by a single automobile concern, with a capital of $500,000; in 1902, two other companies were organized; in 1903 increase of capital of the old companies and new companies organized brought the total capital invested up to $2,200.000. In 1904 fifteen new companies were organized, with authorized capital of over $2,000,000.

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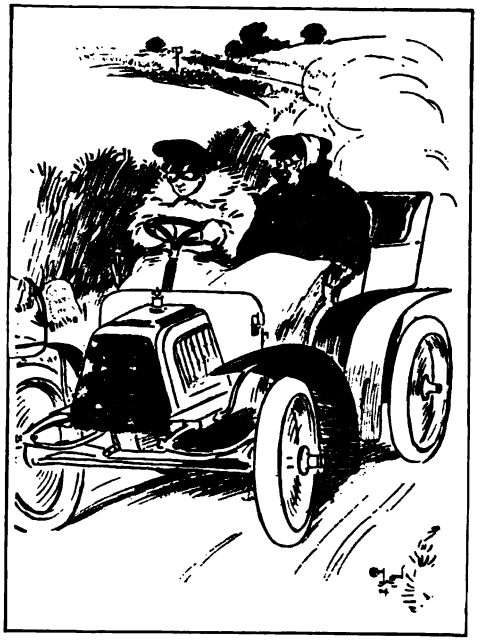
We recently sent out letters to a number of automobile manufacturers, asking for photographs and items of general interest. In response we have received a large amount of material, but in nearly every case the items and photographs submitted have been of too technical a nature to be available. This issue of MOTOR TALK will give an idea of the character of the matter of which we can make use. Photographs and news items must be of general interest and of value from news or artistic standpoint. We will appreciate any aid given us in securing such material.



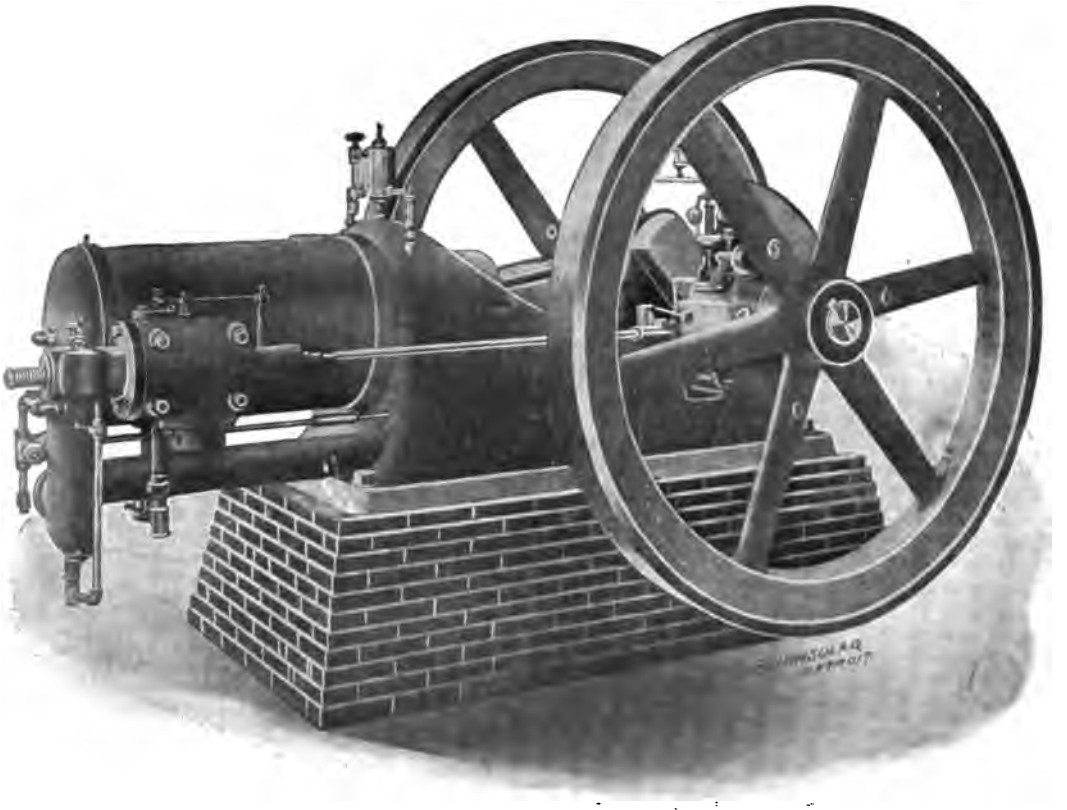
THE PACE THAT KILLS.

First Motorist—"What is the name of this big cemetery we are passing?"

Second Motorist—"That's not a cemetery, my dear boy; those are mile stones."—*The Tatler.*

# OLDS GASOLINE ENGINES

Endorsed and used by the United States government. The War Department in issuing their latest specifications for gasoline engines for West Point required them "to be Olds Engines or equal." Pretty strong and convincing evidence that Olds Engines are the standard.



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Send for catalog describing our Wizard Engine, 2 - 8 H. P., built on same lines as the celebrated Oldsmobile motor, simple and economical.

**Olds Gasoline Engine Works, Dept. A,**
**LANSING, MICH.**

## Motor Talk Calendar

JANUARY

11 - 24, . . Importers Automobile Salon, Macy Bldg., Herald Square, New York.
14 - 21, . . New York Automobile Show, Madison Square Garden.
14 - 24, . . Brussels Automobile Salon.
23 - 28, . . Third Annual International Tournament, Ormond—Daytonia Beach, Fla.
23 - 28, . . Philadelphia Automo'le Show.
27 - Feb. 9, Crystal Palace, London, Automobile Exhibition.

FEBRUARY

1 - 3, . . Palm Beach Motor Boat Races.
4 - 11, . . Chicago Automobile Show.
4 - 19, . . Berlin Automobile Salon.
10 - 18, . . Olympia Autom'le Exhibition.
13 - 18, . . Detroit Automobile Show.
27 - Mar. 4, Toronto Automobile Show.

MARCH

4 - 18, . . Boston Automobile Show.
13 - 18, . . Boston Importers Salon.
15, . . . . Copenhagen Automobile Exhibition.
18 - 25, . . Agricultural Hall Exhibition.
27 - Apl. 5, Washington Automo'le Show.

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THE AUTOMOBILE CLUB of France is arranging for an automobile straightaway speed contest to be held in March, 1905, on the Croisset Road, near Rouen, where a straight road about two miles in length is available.

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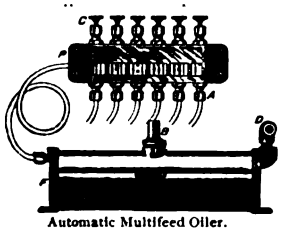

Automatic Multifeed Oiler.

**RELIABILITY.**

We owe it as a *duty* to our customers to *thoroughly* understand the theoretical and practical knowledge of perfect lubrication.

Tell us your lubricating troubles and we will tell you how to get rid of them, we are *experts* in our line and *do not pretend to copy.*

MANUFACTURERS

**THE G. B. ESSEX BRASS CO., Detroit, Mich.**

Cylinder Lubricator.

**OUR STANDARD**

# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

MR. K. TAKAHIRA
Japanese Minister to United States in 1904
Taken in Washington, D. C., last summer

*In ancient times the coach and four—*
*in modern times the*

# OLDSMOBILE

Emerson complained that railways had robbed travel of its sentiment and pleasure. The sage of Concord had never ridden in an Oldsmobile, which combines the speed of the train with all the delights of stage coach travel, revives the sentiment and pleasure with all the discomforts left out.

The Oldsmobile Touring Car with its graceful lines and abundance of power yields instant obedience to the touch of the driver and unites comfort with wonderful speed and endurance. Its 20 H. P. two-cylinder motor meets every requirement with entire freedom from the complications of the four-cylinder cars. Inexpensive to operate. Tire expense reduced to the lowest point. Speed from 6 to 40 miles an hour.

**Oldsmobile Standard Runabout, $650**
**Oldsmobile Touring Runabout, $750**
**Oldsmobile Light Tonneau Car, $950**
**Oldsmobile Touring Car, . . $1400**
**Oldsmobile Light Delivery Car, $1000**
**Oldsmobile Heavy Delivery Car, $2000**

Detailed specifications sent on request.

A pack of Automobile playing cards (standard 25c. quality) postpaid for 10 cents. Address Dept. 50

## Olds Motor Works, Detroit, U. S. A.

*Member of Association of Licensed Automobile Manufacturers*

Drawing by Edward Penfield.
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D
1905

There is but one
Niagara

There is but one
Road

—running directly
—by and in full
—view of
—the cataract.
—It is the

MICHIGAN
CENTRAL
"THE NIAGARA FALLS ROUTE."

—You will soon be
—thinking of your
—summer holiday.
—Send three red
—stamps and get
—your name on the
—list for Summer
—Vacation Tours,
—1905. Ready in
—April.

**Comfortable and convenient through trains daily from Detroit for Chicago, Buffalo, New York, Boston, Grand Rapids, Sault Ste. Marie, Columbus, Pittsburg, Cincinnati**

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It is the epitome, the very keystone, to modern book-keeping. Positively perpetual, far cheaper than any other system of book-keeping, and is 50% better. With it all the items of an account are together, no matter what length of time the account covers. It is self-indexing. You can file as many or as few leaves under any letter of the alphabet as you desire.

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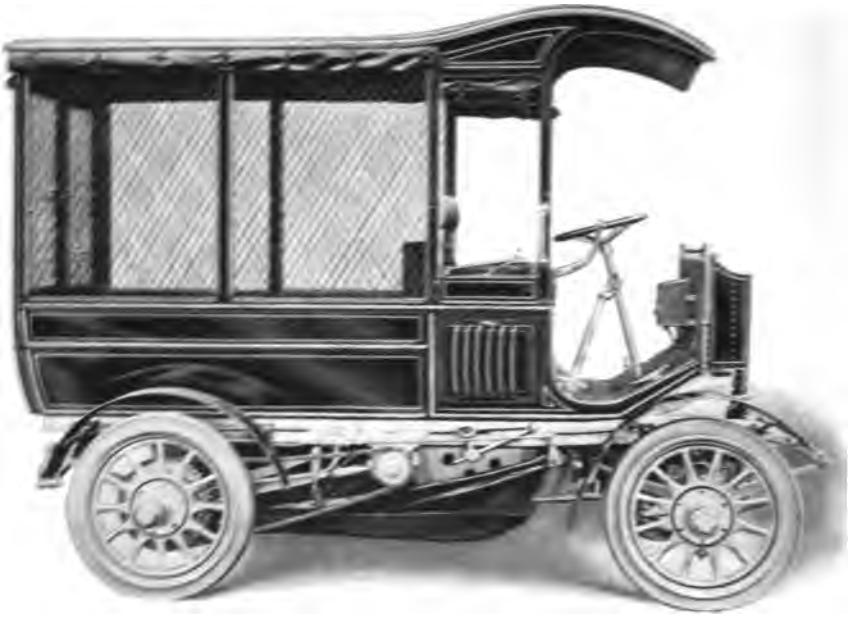
**Detroit, Michigan, U. S. A. Established 1842**

**NEW YORK OFFICE, New York Life Bldg.** **BOSTON OFFICE, 630 Old South Bldg.**



We have grown up with the automobile industry. Our business is making cuts, and we are today producing the highest grade halftones and zinc etchings used in automobile catalogue building. Our proof—the results. Our artists and workmen are thoroughly familiar with the mechanical construction of automobiles, and therefore are able to handle their work intelligently and sympathetically.

If you have a particularly difficult piece of work, and wish the highest quality in results, won't you take the matter up with us?

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**AVENUE THEATRE BUILDING**

**DETROIT, MICH.**

FOR YOUR CONSIDERATION

# THE REVIEW OF REVIEWS

EARNESTLY RECOMMENDS ITS

NEW MAGAZINE

# The Country Calendar

## A BEAUTIFUL AND USEFUL MAGAZINE OF COUNTRY PURSUITS

Large size, magnificent illustrations, costly paper, the finest printing obtainable, and at the same time a most practical and stimulating handbook—such is to be The Country Calendar.

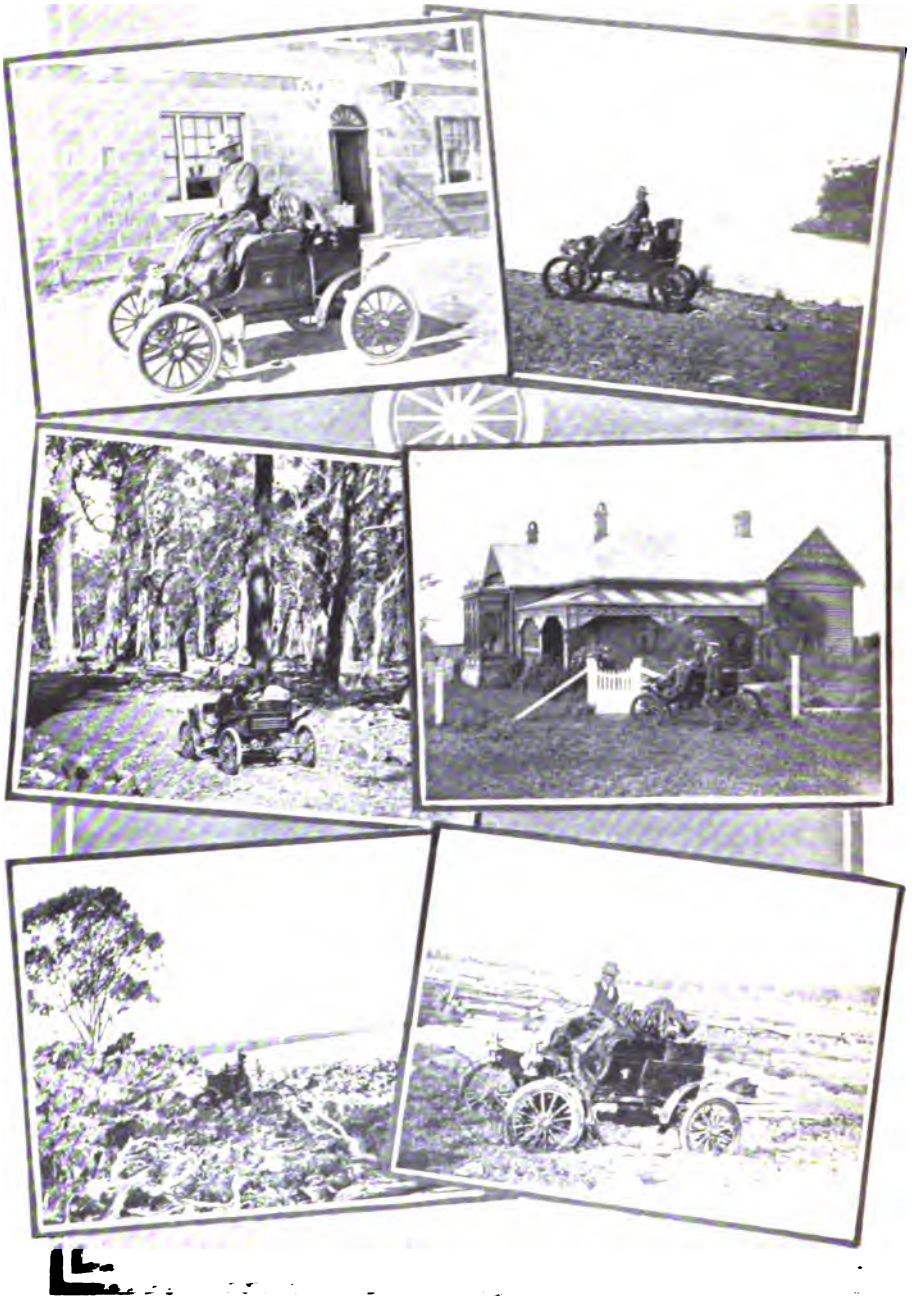
The probable buyers of automobiles are the people for whom the new magazine is made. If it were not for just those country dwellers who need and can afford our $3 magazine, and your excellent automobile, The Country Calendar would not exist.

In your work of marketing an excellent automobile, the most useful fact about the new magazine is that it will have an automobile department in the editorial pages. The editor of this department, a journalist of national reputation, will bring to the pages of the magazine, not spasmodically, but with regularity and authority, the best that is new and useful and practical for the owners and buyers of automobiles.

Space for advertising, next to this automobile department on the large page of The Country Calendar is at your service. May is the first number. Everybody will read the first two or three issues to see what the publishers of The Review of Reviews are doing. We ask you to consult with your agent in time to catch these first issues of The Country Calendar.

THE REVIEW OF REVIEWS BOOK CO.

13 ASTOR PLACE, NEW YORK



AUTOMOBILING IN AUSTRALIA.

# MOTOR TALK

**A MAGAZINE OF OUTDOOR SPORT**

VOL. I. FEBRUARY, 1905 NO. 2

# Tearing Things Up at Ormond

ON the one point of record breaking alone the Ormond Race Tournament of 1905 stands out above its predecessors—that and the dissensions and several kinds of frost, which characterized it. About much that came to pass during the days between January 23rd to 28th, the least said the better, and MOTOR TALK will give its readers the pleasant side of the story in numerous and interesting illustrations.

The press of the country unite in its estimate of the event—a failure as to management and true sportsmanship—a success in the comparatively unimportant part of record breaking.

The *Automobile* says: "The unsavory details of the failure of the great Florida race meet which have been spread broadcast throughout the country, will some as news to many, but at the same time the final fiasco is but the public manifestation of evils which have for some time afflicted automobile racing. The assumption of power and its abuse by the American Automobile Association, the readiness with which the leading officials have lent themselves as tools for the furthering of petty local disputes and senseless personal quarrels, the general negligence of the principal officials and incompetence of the subordinates, have not only spoiled all present sport, but have disgusted all good sportsmen in the automobile world.

"These conditions have been a matter of common knowledge to those on the inside, and comment on them has been withheld only for the sake of the sport and to give the A. A. A. an opportunity to make good at the Florida meeting, which it has utterly failed to do. It has, instead, publicly declared its incompetence.

"In a capable and efficient racing board there must be a policy of undivided devotion to the broad interests of the sport, ignoring all private and personal issues and looking only to the general good."

*Motor World* says: "Sport and commercialism won't mix. As when oil and water are poured into the same vessel, oil rises to the surface, so does commercialism inevitably come to the top when the

effort is made to have it commingle with sport.

"In the realm of sport, commercialism is designated professionalism, and it is a matter of history that while life lasts professional spirit is strong. The professional spirit is the 'What-is-there-in-it-for-me?' spirit. It was this spirit that originally inspired the Florida speed carnival. It was this spirit as embodied in the persons of hotel keepers and most of

WATCHING THE TIMER.

the others concerned that has dominated the affair. It was a life-long, dyed-in-the-wool professional who held the managerial reins. There were trophies asked for and obtained solely on a commercial basis. Favors to newspapers or newspaper writers were distributed to further purely commercial interests.

"It was inevitable that the first attempt to rescue the sport from such professional clutches would result in some turmoil. The effort was made this year, and, of course, turmoil resulted."

*Horseless Age* says: "The Ormond Beach races this year have been typical of many of the important racing events of the past. They have been characterized by a fatal preliminary accident, sensational record breaking, and dissatisfied visitors. The fatal accident to Frank Croker and his chauffeur seems to have had no influence on the races proper, the phenomenal records made indicating that the cars were speeded to the utmost limits of their power.

"The preliminary arrangements in connection with the tournament are said to have been the cause of quite a serious disturbance in the racing board of the A. A. A., and further complications are expected to follow as a result of dissatisfaction among members of the board with the manner in which the races were conducted. Two of the members of the board who attended the meet are reported to have handed in their resignations. It is somewhat difficult to judge whether this action was in any way influenced by soreness over lack of success in the meet, or whether it was due solely to disgust with the methods employed in commercially exploiting the meet."

*Motor Age* says: "The story of the mismanagement of the Ormond tournament and the American Automobile Association's part in the comedy of errors, is but another addition to the long string of tales of ineffectiveness, foolishness and grotesqueness which has composed the history of the American Automobile Association.

"The time is ripe for the establishment of some system of national organization which will consistently and practically represent the interests of both clubs and individual motorists, and those of automobiling generally."

## New World's Records

| Date. | Distance. | Driver. | Machine. | Time. | Miles per Hour. |
|---|---|---|---|---|---|
| Jan. 24 | One mile | A. C. McDonald | 90 h. p. Napier | 0:34 2-5 | 104.6 |
| Jan. 24 | Five miles | A. C. McDonald | 90 h. p. Napier | 3:17 | 91.4 |
| Jan. 25 | One mile, steam cars | Louis S. Ross | 20 h. p. Ross Steamer | 0:38 | 94.7 |
| Jan. 30 | One hundred miles | H. W. Fletcher | 90 h. p. De Dietrich | 1:18:24 | 78.7 |
| Jan. 31 | One kilometre, for steam cars | Louis S. Ross | 20 h. p. Ross Steamer | 0:24 1-5 | 112.5 |
| Jan. 31 | Ten miles | A. C. McDonald | 90 h. p. Napier | 6:15 | 96.0 |
| Jan. 31 | Twenty miles | A. C. McDonald | 90 h. p. Napier | 15:23 | 78.0 |
| Jan. 31 | Fifty miles | H. W. Fletcher | 90 h. p. De Dietrich | 38:58 | 92.5 |

Walter Christie, winner Lozier Trophy. President Steck and President Whipple.
Arthur McDonald and Dr. Stetson in 90 H. P. Napier; mile record. 34 2-5.
Jas. L. Breese and Edna Steck, daughter of Pres. Steck. Fletcher, in 80 H. P.
De Dietrich, winner of 100-mile Vanderbilt cup race.

BOWDEN'S DOUBLE ENGINE RACER—DEVELOPS 120 H. P. TIME—1 MILE, 34 1-5 SECONDS.

## Learning to be a Motor Driver

We are frequently receiving letters asking for advice from men who contemplate taking up the care and driving of a motor car as a means of earning a living. Many of our correspondents are entirely without mechanical taste, yet they are led to believe by advertisements in the daily press that for any sum from four guineas to fifty guineas they can in a few weeks command a position at a salary varying from £100 to £500 per annum. Now, to the thinking man it is obvious that something must be wrong somewhere when so much can be gained with so little expenditure of cash and brainwork. There are, however, many men who have parted with their guineas and have received in return that little knowledge which is a dangerous thing—and a certificate which is in most cases not worth the paper it is written on. The engagement of a man with such qualifications is naturally followed by disastrous results to the car and expense to the owner, for even if the so-called driver does not succeed in carrying away a gatepost or two, or something equally expensive, there is certain to be a long bill for repairs attending that individual. On the other hand, there is the man himself who has parted with his guineas and two or three weeks of time, and is turned adrift, possibly honestly thinking he knows all that is necessary for the satisfactory performance of his work, and boldly applies for a situation, asking £5 per week for his services; he generally gets no reply at all to his letters, or a rude awakening by an offer of 25s. or 30s. a week, which is all he is worth. Many of the directors of motor schools, institutes, associations, and suchlike are apparently aware of this, as an examination of their prospectuses will seem to show. Let us quote from a few we have before us, and call particular attention to the first, as it may well be laid to heart by all:

"There are no vacancies worth having in any industry for men who can see no further than the periodical pay day. It is surprising the number of half-taught men that are about with five-guinea certificates in their pockets, who are not fit to handle an automobile."

"There are excellent openings and a good demand, as you have undoubtedly seen in the daily papers, for skilled motor drivers at salaries varying from £2 to £10 per week."

VIEW OF BEACH LOOKING TOWARD DAYTONIA.

*. . . as you are probably aware, we will do our best to find you a good position . . . We are now experiencing a great demand for drivers in January, February, and March, so there is no time to be lost."*

*We are the largest dealers of second-hand cars in the country, and have a hundred cars in stock . . .* thus the pupil is accorded every facility for studying the different machines. . . . Lucrative appointments going at present time for drivers and engineers, the remuneration for which ranges from £2 to £10 per week. . . . We constantly have from eighty cars upwards always in stock, comprising many of the latest models. . . . further, the pupil has the opportunity of studying the adjusting and repairing in all

# "Are-and-be"

## FLAT OPENING Detachable Leaf Ledger

Combines positively the only perfect flat-opening ledger paper made with the strongest and simplest mechanical construction used in connection with a ledger binder.

The famous Backus Bond-Hinge all-paper flat-opening ledger stock is made at the mill by a union of **bond** and **ledger papers,** producing **great strength** and **absolute flexibility** at the binding margin and at the same time **decreasing** the **thickness** at this point. You will note that this sheet is not weakened by any process of crimping, buffing, scoring, nor gouging.

The Current Ledger Binder is made with a square back, thereby preventing any chance of rolling or rocking with every varying pressure of hand or arm. There are no loose pieces, springs, chains, ratchets, or other cumbersome mechanism to get out of order—the expansion and contraction of our ledger being controlled by two traveling lugs—the only wearing parts.

All parts of this binder are interchangeable, so that should an accident befall the ledger it is not necessary, as with other makes, to return the binder to the factory for repairs. Any repairs necessary can be made on our binder without taking it out of the office. Our backs are also interchangeable, so that if the maximum capacity of the current binder is reached, a new back can be substituted without any additional charge.

Our free Catalog S, fully illustrated, is descriptive of this grand ledger; the Backus Bond-Hinge all-paper sheets; and our Improved Trial Balance Book, with extension recapitulation sheets. Mailed promply on request. Send for it. It is worthy of your attention. Send to-day, because there is a distinction in loose-leaf systems, and in the "Are-and-be" Detachable-Leaf Ledger you get the best of that distinction.

## The Richmond & Backus Company

**ESTABLISHED 1842**

**DETROIT, MICHIGAN, U. S. A.**

**NEW YORK OFFICE, New York Life Bldg.** **BOSTON AGENTS DUNN & CO., 170 Summer St.**

FRANK CROKER AND ALEXANDER RAUOL, HIS CHAFFEUR AND HIS SIMPLEX MACHINE BEFORE FATAL RIDE IN WHICH BOTH MEN LOST THEIR LIVES

A MUTE WITNESS

*(Continued from January issue.)*

AUTOMOBILES are not created by the combined labor of a score or so of men upon one machine from the moment of its conception to its testing for the road. That was the idea of the writer, and probably the reader, whose mind we shall attempt to disabuse. In this machine shop one sees whole bushels of rivets, literally tons of cylinders, truckloads of sprocket-wheels, and the other thousand parts being lugged away to the stock-room—completed. There is no half completed automobile waiting impatiently for its cylinder or crank-case or cam-shaft to leap into palpitating life. Ten thousand cylinders are bored to precisely the same diameter to the ten-thousandth of an inch. Your crank-case, carburetor, driving wheel, everything and anything is selected indiscriminately from a mammoth accumulation of its fellows. This makes for economy in the price of manufacture. And that, in turn, makes possible the price for which the Olds machine is obtainable on the market.

But above all, it insures a uniformity that is utterly beyond the possibility of deviation. A sprocket-wheel that is cut in a gang of 32 of its fellows hasn't much show of originality. It is precisely like its 31 brothers. It makes a pretty enough literary figure, this tracing the materialization of an automobile from the draughting-room to the sales department. But unfortunately it is impossible when the vital organs of every lusty car are being turned out in carload lots.

One has no difficulty in conceiving that there must somewhere be a huge supply-house of raw material for this vortex of endeavor. And there is. Were the stock-room of this plant to be isolated and put upon its own resources, it would easily command the community's respect as a dignified, wholesale hardware store. It is a room which in itself might easily have contained all the automobile labor in the country a few years ago. And it contains only those things that go into a few months' output. There are tiers of shelves and substantial looking compartments opening up vistas a city block in length. One would think that there were enough iron and steel to supply the nation with automobiles, for at least a year. There are tons of shafting, band iron and tubing; sheet brass and spring steel and cold rolled shafting. This last is used for the shafting for reasons that are unimpressive to the uniniated, but all sufficient to the maker of automobiles. The shaft of the machine is naturally subjected to two distinct strains, the pull of the belt (or bending moment) and the torsion effect or turning of the shaft. Experience has

PRESIDENT PALMA—THE "GRAND OLD MAN OF CUBA" WATCH THE RACES.

# Automobile Racing in Cuba

*First meet held February 12-17, 1905.*

The first automobile road race held in Cuba, Feb. 12th to 17th, has attracted the attention of enthusiasts everywhere to Cuban roads and the possibilities they offer for this line of sport.

A number of records were broken—notably, the mile road record by Henry W. Fletcher, who changed the mark to 45 seconds. The cup was won by Ernesto Carricaburo, a Cuban, who drove the 60-horse power Mercedes belonging to President Conill, of the Havana Automobile Club. The competitors were Major Miller's 40-horse power Mercedes, Rameon Mendoza's 35 horse power de Dietrich, and O. F. Thomas' 80 horse power de Dietrich. In chronicling the event the Havana Post says in part:

"The success which has attended the automobile races should be most gratifying to every one because it means that the royal sport has been firmly established in this country. That the sport is approved and enjoyed by the people of this country is evidenced by the fact that nearly seventy thousand people witnessed the race on Sunday between Arroyo Arenas and San Cristobal.

"It is, of course, particularly gratifying to the people who live here that the big cup was won by local talent. This is an honor which we were not expecting, and it is for that reason all the more acceptable. The fact that a Cuban won the race augurs well for the future races which will be held here. The people owning racing cars in the north will awaken to the fact that they can get real sport right here, and from the Cubans themselves. The result will be that next year the best cars, not only of the United States, but of the world, will come here.

"We have criticised the International Racing Association more than once because

of the novitiate are still unblighted, the automobile receives back its festal garb and is ready for the seal of the public approval and worthy of the firm's confidence.

Guess work is eliminated in the manufacture of the Oldsmobile. Chance is not given much latitude. The amateur who makes his machine generally ends his venture by buying another. The Olds car that is exposed for sale has been through a test of fire.

Returning to the Assembly Room—from which we have strayed wantonly, by the way—is to witness the achievement of that bewildering detail, which promised labor enough in the crude state of the machine shop below. Step by step, part by part, rivet upon rivet, the delicate mechanism of the engine grows here before one's eyes—until at length the work of assembling is done. The automobile engine stands before one, a naked creation of steel, mathematics and patient human endeavor. It doesn't look much like an automobile to the novice. It doesn't look much like anything. One, unfamiliar with the rudiments of mechanical science, would never dream of the possibilities in that body of oily metal. Then the engine upon its frame is put upon a temporary set of wheels and tugged over to the Erecting Shop for the last and highly important touches in its creation.

It is here, as we have said, that the motor is crucially tested under its own power. Here also carburetors are tested. Indeed, the whole engine is here forced to demonstrate its temper, its possibilities, and its whims with an exhaustive thoroughness. Seldom are material alterations necessary. The designer, the draughtsman, the experimenters and the workmen in machine shop and assembling room, have made this machine so precisely according to plan and exactly like its legion of predecessors, that its career is assured and its life usefulness a foregone conclusion. Nevertheless, this Erecting Room is a feverishly busy place. It is an enormous room. It could contain a city block of cottages, a story and a half high, and never show the slightest symptom of congestion. Here the completest harmony is established between parts. Here the radiators, battery boxes, and water and gasoline tanks are being tested for any irregularity and adjusted to their life positions in the

"A SPROCKET-WHEEL THAT IS CUT IN A GANG WITH 32 OF ITS FELLOWS HASN'T MUCH SHOW OF ORIGINALITY."

anatomy of the fast-maturing machine. The hood is being given its last touches, and mud-guards are being placed in their proper places.

If one fancies that the mechanism of an automobile is not as delicate and prone to ailment as the anatomy of a teething baby, a cursory inspection of the Erecting Room may serve to disillusion. The turning of a nut a hair-breadth; the insertion of a washer the thickness of paper; a tightening here; a loosening there; a touch where experience points, and one sees the magic transition from a mass of useless metal to a wondrous thing that moves and palpitates with the nearest approach to the mysterious spark of life.

The machine virtually lacks now only its highly finished body, its wheels, its lamps, and ornate bright-work, to be ready for the critical eye of the customer.

For the finishing of the woodwork—that is, the bodies—another great department is necessary. These bodies, tonneau and all, when unpainted, are

# The Fascination of Automobilism

*By C. N. Williamson*
*Joint Author of "The Lightning Conductor" in Strand*

WHEN I was a small boy someone took me to the little church of San Giorgio degli Schiavoni, in Venice, because they wanted me to see the Carpaccio pictures, and because I was less likely to get into mischief or to be bored than if left at home.

"Look at the awful dragon, dear, and the terrible basilisk," said the grown-ups, getting me off their consciences before beginning to enjoy themselves.

I did look at the dragon and the basilisk, and I was not at all bored. Indeed, I enjoyed myself as much as the grown-ups, though in a different way. I was not shocked at either of the animals which struck such terror into the hearts of their human contemporaries. On the contrary, my childish soul was filled with an intense admiration of them, an intense delight in them. I thought they were the most completely fascinating creatures I had ever even dreamed of (which is saying a great deal); and I felt that if I could only meet such splendid beasts, tame them, and have them for pets, I should ask no more of life.

That day was an epoch in my life, though nobody knew it but myself. After that there was a kind of aching void in my heart, which could never be filled except by a dragon and a basilisk, or something as nearly like them as possible.

For some years I hoped against hope; for if Carpaccio had experienced basilisks and dragons, why should not I? But as I grew older I lost courage, and came sadly to believe that nothing could bring forth the desired animals in these piping times of peace. I had settled down to the phlegmatic resignation of the thirties, when suddenly there were rumours in the world of a new comet.

One heard things; there were whispers of an invention that was going to revolutionize the world. But it had been heard of before, and nothing much had happened. Besides, one saw nothing, and—the newspapers must be filled somehow.

Then, however, came another epoch-making day for me. It was on the Stelvio Pass—the most stupendous highway in Europe, and, I believe, the highest carriage-road in the world, taking you up ten thousand feet into the air, as you travel from Austrian Meran, before dropping you down in Italy at the Baths of Bormio. The smoking horses that drew our carriage were showing horse-nature at its most pitiable depth, crawling like weary flies up the skein of twisted silk flung against the precipice, which men chose to call a road. Glaciers rolled their frozen waves of blue-green ice well nigh to our feet, and some of the highest peaks among the Alps soared glittering above our heads.

The scenery was nothing less than thrilling, but our slow way of locomotion, the strain our horses were put to in drawing ourselves and our considerable pile of luggage, gave us a secret, guilty feeling that we did not dserve the thrill; that we and our belongings were out of the tremendous picture.

Then, suddenly, looking up the steeps whose summit we should be hours yet in reaching, we saw two small objects, one grey, the other red, spinning down the pass at incredible speed. We stared, wondered, held our breath and thought of an invasion of Martians—a comparatively easy feat for a clever people to accomplish at such a height at this.

The two extraordinary things were racing down a steep slope. At the corner, first one slowed and then the other. They took the cure flying, dashed headlong down the next slope, repeating the inspiring trick at each of the multitudinous zigzags, and before we, our driver, or our horses quite realized what was happening were close upon us. For our sakes they slackened speed. We saw huge eyes that would be all fire at night; we saw great shining metal noses; we saw wheels tyred with fat pythons; we saw that the monsters were guided by strangely swaddled and goggled men. Reason said, "Automobiles." But something within me cried, "At last! The dragon and the basilisk!"

After long waiting the time had come. These glorious creatures existed, could be bought, possessed. I determined to have one of each.

These were the first motors that had ever crossed the Stelvio, as well as the first that had ever "crossed my path," as the melodramas say. Everybody was excited about them (this was before mechanically-

LONG LINES OF MACHINES ALMOST HUMAN IN OPERATION.

must be four signatures; the man who makes the original drawing; the man who traces it; the man who checks it when the new-born machine is working beyond criticism and the man in highest authority, who O. K.'s the work when the idea is at last an animate thing of steel.

There are not left in this system much room for possible error. An improvement that has been conceived and tried out in this department is worthy of adoption in the manufacture of the standard Olds machine. Here a new type of motor is being tried out and a new design of spark-plug and an innovation in carburetors—every carburetor novel or standard is thoroughly tested for that matter. A new lubricating oil, a new brand of gasoline, a new sprocket-wheel is here subjected to tests that will demonstrate its value or worthlessness. This Experimental Department employs a mechanical chemist of wide reputation, also seven draughtsmen and four expert mechanical engineers. In the main body of the plant more draughtsmen are at work.

The plant, having once been visited by a disastrous fire in the height of its busiest season, has taken elaborate precautions against a return visit. The company has its own pipe line with which one of the city fire-boats can make connection. The plant, it will be recalled, has an extensive river front, docks and warehouses on the Detroit river. In addition to this, every inch of shops, offices and ware-rooms is covered by fire hose, and there are 60 alarm boxes on the premises. Every foreman is in command of a well drilled fire-fighting brigade.

An office of 75 people makes a very

sullen, and I have known them vicious; these need severity, but all those worth their petrol can be conquered by a born chauffeur.

Men who have a constitutional antipathy to machinery—as some people have for cats—can never drain the full draught in motoring, for they will simply enthrone themselves, enveloped in furs, while another man guides the car and knows the best and worst of it.

To play the game as it should be played an automobile owner must not regard the heart of his steed as a mere greasy mass of mechanism and think only of the glossy outside. He must put on overalls and acquaint himself with the inner workings of the creature's soul. He must as least understand thoroughly the significance and relationship of the various parts, be able to adjust and clean them, and know by the sounds which issue from the engine and the gearing what is happening in the dark recesses—whether the monster has indigestion, whether he is coughing, swearing, or only cooing to himself.

No pleasure is more complete—not even the obvious one of flying through the air at fifty miles an hour—than to triumph over a refractory or mysteriously ailing automobile, and to do it all yourself. There is the same kind of pride in this achievement as that of a man who makes a haughty thoroughbred obedient to the rein. Beyond all this, there is no fun so good as the fun of learning, for an amateur chauffeur whose heart is in the game. He talks of tyres and carburetters, sparking-plugs and densemetres, as a lover discourses of his lady's eyelashes. And he can be a lover, too, all the better for being his own chauffeur; for, if he and the automobile are good friends, he can take her for an outing with no smug professional sitting in the tonneau, straining both ears to overhear the conversation.

One ailment for which motoring is particularly beneficial, I don't think I have ever seen mentioned in print. One hears and knows that it is a cure for consumption, asthma, dyspepsia, insomnia, and love-sickness; but it is also an infallible remedy—or so I have found it—for the tendency to lose hope too easily.

The triumphs of hope over experience in motoring are beyond counting. An accident happens; but you feel sure that it will not happen again. You carry friends away with you on an expedition, with a certain delightful goal in view. Either you do not reach that goal in time or you do not get there at all; but that doesn't matter to you. You are confident that no other adventures could have been so delicious as those which you and your party have had; while as to reaching the exact destination you had happened to choose, that was no more than a detail; and that, in fact, everything was for the best, in the best of all possible automobiles.

This state of mind gradually sweetens your disposition, bears you gaily through the minor trials of life, keeps you happy and makes you popular, even though you may not be self-conscious enough to attribute it all to motoring. Nevertheless, it is really that. And you can only obtain this full result by knowing how to be your own chauffeur. Accidents, instead of being amusing, are maddening when you can't find out for yourself what is the matter, but must trust to someone else to solve the mystery. But play the game as it deserves to be played, and the road across the world is open to the amateur chauffeur just because some clever fellow has invented a little engine to run for hours without tiring, given some common spirit to vapourize and an electric spark to explode it.

## Motor Vehicle vs. Horse Diligence in Europe

An important and extensive development of transport by automobiles has been inaugurated in middle and southern Italy. The present horse diligence service is considered too lumbering, costly, and slow in comparison with motor vehicles. The type of car which is to be introduced upon the new system is the "Pipe," the well-known Belgian car. Contracts have been placed for the supply of 600 Pipe chasses fitted with 20-horse-power motors, together with 300 wagon and 300 omnibus bodies, so that one-half of the consignment will be available for the transit of freight, and the second moiety for passenger traffic. The bodies are, however, to be made interchangeable, so that, if necessary, a car can be converted from one type to the other in about half an hour. The omnibus vehicles will have accommodation for 10 or 12 passengers, and the freight cars for two tons of merchandise. The scheme is being organized by the government and the various municipal corporations that will be concerned and benefited by the service. The roads are to be overhauled, corners eased, bridges of substantial construction erected at necessary crossings over ravines, and other improvements carried out. The system will be operated upon similar lines to a railroad, with stopping places at certain intervals, where the municipal authorities will establish open waiting rooms. The first route is to be opened in January next, and the succeeding services as rapidly as the necessary arrangements can be completed.

CHRISTMAS DAY IN CALIFORNIA.

Taken on Christmas Day, 1904, in front of the Pioneer Auto Company's Garage, San Francisco.

# Indiana to Virginia in a Motor Car

*By E. R. Armentrout*

PULLED out of Terre Haute in a light gasoline runabout on Thursday, Nov. 17th, at 1 P. M. over the National road for Indianapolis, 72 miles distant, enroute to the Valley of Virginia. This portion of the proposed great transcontinental thoroughfare, the dream of earlier statesmen, is something of a disappointment to the autoist who for the first time traverses it. In many parts it is not just what the motorist considers ideal. Our first "incident" occurred when some 20 or 25 miles out we were slowly threading a winding steep hill on low speed when the car rapidly lost power and soon came to a rest. The inevitable turn of the crank with an eye on the spark-gap apprised us of the fact that the usual source of trouble was all right and that we might proceed to look elsewhere. After opening up the carbureter and taking out the spray plug and doing some other things equally as unnecessary, our wandering thoughts were directed to the fuel supply which we found in quantity insufficient to reach the supply pipe, the limited quantity being in the rear part of the tank on the steep grade. A walk of a mile back to a store that we remembered to have passed relieved us of this difficulty, but set us to wondering why manufacturers do not know enough to

ONE VIEW OF THE MACHINE ROOM.

and never heard of again, which the manufacturers never exactly construed as a misfortune. The third Oldsmobile, reaping the benefits of successes and even more instructive features, was brought to light in 1894 for the Times-Herald competition, but not being in satisfactory condition, was not entered.

The situation was now looked calmly in the face, and it was decided to wipe out records, memory, regrets, in fact everything but hope, and begin anew the sturdy task of perfecting and marketing an Oldsmobile, which would weigh less than 600 pounds and sell for less than $700. It has been done. In 1902 about 2,500 Oldsmobiles were sold. In 1903 about 3,000 were turned out by the two plants. At the time of this writing the company is turning out about 50 machines daily, 20 tonneau cars in Detroit and 30 Oldsmobiles in Lansing. This will mean about 6,650 cars for the crop of 1905.

About a mile from the state capitol, indeed its gleaming white dome is distinctly visible across the green hills, there is a huge quadrangle of buildings. Here is born the Olds mobile 30 of them a day. There is seeming but feverish production going on here. All the designs and drawings and ideas come from the engineering department of the Detroit plant. But that is enough—more than one can see in a week. Here there are 750 men employed.

If one can picture in one's mind a room 400 feet long and in it 400 men operating a few more than 300 of the most modern machines, such as lathes, drill presses, gear-cutters, threaders, etc., one can secure some vague idea of what this mammoth machine presents when working to its fullest capacity. But for its much greater size, this great hall closely resembles the corresponding department in the Detroit plant. But the vast amount of arduous detail that is being done lifts it beyond the comparison. Here each and every part of the Oldsmobile—also the Olds railroad inspection car—is being machined. Here all tools, jigs and fixtures are being made. The detail of the Olds delivery wagon, also turned out in large quantities, is being done in this gigantic shop. In one corner there is a forest of rear-axle cases alone. Here is a pile of fly-wheels, heaped ten feet high and weighing in the aggregate more than five tons, all the product of a few hours' toil. In a corner is the ingenious machine which

AUTOMOBILING IN CEYLON—A SNAP SHOT IN THE RAIN.

THIS INTERESTING PHOTOGRAPH SHOWS HOW THE ELECTION RETURNS WERE GATHERED AT POUGHKEEPSIE, N. Y.
AT DETROIT OVER THIRTY MACHINES WERE EMPLOYED IN THE SAME WAY.

joicing once more. The roads as we now neared Cincinnati improved, though somewhat more hilly, in fact, in the neighborhood of Lawrenceburg, some 25 or 30 miles from Cincinnati, where we made our last stop for fuel and lighted our headlights, and most of the distance as we followed the windings of the river from there to Cincinnati were all that could be desired. On this day's run we passed (I say it advisedly—we "passed") relics of earlier civilization in the form of two toll-gates, and of course they were on the worst portion of the road over which we had traveled.

A night's rest in the Buckeye metropolis and a short run the next morning in which we encountered the sands of the little Miami brought us to the hospitable home of friends, in the persons of Mr. and Mrs. Jos. B. Rapp in the beautiful little town of Boston some 20 miles east of Cincinnati, where we spent Sunday. On the following Tuesday afternoon we left here, directing our course towards Parkersburg. Our first stop was an "experience,"—a mile from the little town of Marathan we found our radius rods so badly bent that it was dangerous to try to run, consequently we had to "hit" the pike for that mile after an entirely different method. After thus losing the greater part of the afternoon we drove on to Hillboro where we put up for the night. The next day took us to Chillicothe where we were surprised to find quite a well equipped automobile factory, working some 25 or 30 men. The next day being Thanksgiving we decided to spend it here, and through

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lost time." Before reaching that place, however, we struck some steep and sandy hills and had some more "experience" in the way of bent radius rods—a weak point of our machine.

We finally, however, sighted the Ohio and were treated to another long stretch of deep sand—one of the banes of the autoist's life—as we followed its tortuous course on to Parkersburg with its attendant and necessary evil, the ferry. Since childhood the miserable condition of the roads of West Virginia had been instilled into our minds on every occasion of reference, so that we were very agreeably surprised to find for several miles east of Parkersburg a fine, solid, smooth macadam road.

We were almost tempted to abandon our early taught theories when our gradual disenchantment began as the road commenced to take on a corduroy shape, and in many places appeared to be rolled up as though ready to be moved—and I sincerely trust that such move will be consummated before we have occasion to again cross West Virginia. Our English auto friends tell us we have no roads in America—if we were to take them into West Virginia they would probably tell us that we had no place to put roads if we had them. I am advised that one little county in that state has legislated prohibition of autos entirely. If the county was intrinsically of as much value as a good motor car, such a provision would take the form of a huge joke, as it is probable that the roads are not fit to lead a self-respecting dog over and no autoist would attempt them except in case of dire necessity. But to our subject. The roads becoming so very rough and steep and being advised that snow was in the mountains ahead of us, we decided after spending the night at a village some 40 miles east of Parkersburg to abandon our drive through West Virginia, and consequently took to the railroad after consigning our car to the tender care of a freight train.

## Flying

Over the roadway narrow
And under the azure sky
We glide with the speed of an arrow,
My motor car and I.

Out where the corn is waving—
The wind blows fresh and strong—
Our souls in the ozone laving
We sing the cylinder's song.

Over the hills we rally
Under the sun's bright gleam,
And down through the restful valley
We fly in our power supreme.

With us no spectre may reckon.
Who cares if, as onward we fly,
A legion of sirens may beckon
My motor car and I?

*T. M. in Life.*

firm is doing. That is what the wish and the insistent clamor of the American people are making it do.

And to question the permanency of the automobile vogue is as profitable and rational as to question the life of your railroad train or even man's anxiety to reach his destination with the least loss of time and effort. The bicycles went out even as the ephemeral moth of the summer night, for excellent reasons. It was dependent wholly for its locomotion upon direct human effort. Man is inherently lazy. That has always been a tremendous stimulous, anyway, to invention. The bicycle was a toy. The auto-car is a tool. It will revolutionize society and industry even as your trolley and suburban railway have done. Its use will establish it speedily as wholly indispensable. It comes the closest of all means of transportation to annihilating distance and therein is the argument paramount and indisputable. Certainly its perfection is not yet attained. For what purpose are scientific experts working in laboratories and vastly expensive experimental departments maintained? Competition is taking care of all that. When one contemplates economy in all its elements; when one sees incorporated his outings, his business interest and his most cherished physical comforts and ease of mind, all in one invention, he ties to it, even as the American people have tied. And its life is not subject to the laws of the unreckonable popular whim.

Mine host of the Lansing hotel escorts you to the door with lavish assurance of the honor you have done his house and once again prophesies a glorious future for his town and the automobile industry in general, the one assertion of his which you feel free to accept at par value. The Oldsmobile, one of the five score on the streets of Lansing, takes you away to the depot.

You ask the drummer to remove his feet from the chair to which the porter waives you with unctuous urbanity spelling the overture to a tip. And you dash out of the thrifty inland city of Lansing with a mind jumbled hopelessly with impressive spectacles and through the window fleets a last glimpse of the red-brown settlement on the hill-top where Oldsmobiles are made.

Were it good taste we should feel disposed to close this little volume with an apology. After all apologies are better form near the finis than in the preface. At least, they are less disconcerting. To one who knows automobiles as thoroughly as the author (and every owner) fain would, this cannot have been illuminating. To one who is athirst for knowledge, we feel that we have held no bumper of information. Candidly, we have attempted only to tell generally of those things which must surely impress one who makes a journey through the mammoth plants of the Oldsmobile. We have striven to tell even thus inadequately of the planning, the experimenting, the patient exertion, the ceaseless effort to attain that ignis fatuus—"mechanical perfection."

Possibly somewhere we have stumbled over the reasons why the Oldsmobile is the largest selling machine in the world to-day; why the Olds Motor Works are months behind their orders; why an ever widening stream of Oldsmobiles is winding its spiral way around the world. If we have done any of these things we are repaid. But if we have afforded entertainment along with a modicum of information—why then we shall feel immensely gratified.

AT LANSING.

chines for commercial and utility purposes leaves no room for argument as to whether or not the automobile is here to stay. It is a prominent feature in the business world, it is unexcelled for pleasure purposes, and is becoming a most important factor in the problem of transportation for short distances. With a world-wide business, such as is done by the Olds Motor Works for example, who manufacture not only pleasure vehicles, but build commercial wagons and railway inspection cars, it is very easy to judge the hold the motor car has upon the American public, and the certainty that the demand for machines can never grow less and must increase beyond the ideas of most of us. Improvements in American automobiles have been radical in the last two years; we are selling our cars in the original home of the automobile,—France, and in aggregate numbers this country far exceeds any other in the quantity of cars manufactured. The industry is going ahead with leaps and bounds, and the only limit seems to be the question of good roads in sections which do not have them now. A united effort on the part of those interested will put through the Latimer bill, now up before the Senate, and if the Senate passes it there should be no trouble in the House, and a year from now, better roads throughout our country will be-

HANOVER'S PROGRESSIVE FIRE DEPARTMENT.
*Courtesy of Collier's Weekly.*

The automobile type of engine has been applied to fire-fighting apparatus in Hanover, Germany, with great success. All "steamers" are of the automobile type. One set of engines drives the wheels and another the pumps. The supply of water and coal in the tender attached are good for a run of fifteen miles. In one wagon is carried a full "diver's suit," with air and telephone connection, in which a fireman may enter a smoke-filledhouse, while water pumped through a third pipe falls from the crown of his helmet in a protective shower bath.

come an absolute certainty. It surely seems time that we took a chapter from the book of European roadmaking and emulated the example of our brothers across the water, whose roads are the finest in the world and whose country districts are perhaps more charming than the cities. About the only class of people who seem to receive no great amount of benefit from Government appropriations are the farmers. The rural mail delivery was an important recognition of their needs, and good roads are even more to be desired. The prosperity of our farming community has much to do with the general prosperity of the country, and if our farms are prosperous, so likewise are the manufacturing interests who sell them goods.

The prosperity of the automobile industry depends upon good roads, and if the Latimer bill can be put through, its beneficial effects will be far reaching.

Many plans are suggested to secure good roads, but the quickest and most feasible way is through the speedy adoption of the Latimer and Brownlow measures. As each state must duplicate from its own Treasury the appropriation it receives from the Government, it will not take the state long to appreciate the benefits to be derived from better road conditions, as their appropriations by the third year will no doubt be much larger than the amount received from Washington. It is provided that the states should maintain the roads, and once our people as a whole fully understand the financial value of first class highways, there will hardly be an opposing voice to generous appropriations in every state in our Union. The press of the country can do much towards influencing popular sentiment as well as legislative sentiment, and concerted action on the part of everyone interested for the next few months should pass these measures and permit work to be started before the year 1905 is over.

Your personal influence with your senator and representative in Washington is needed, and a letter addressed to both favoring the passing of the Latimer and Brownlow measures will do much toward securing their votes.

Nothing can count more for the passage of the bill than such letters, and if every reader of MOTOR TALK will go this far we can expect definite action by congress before the end of the present session.

## The Question of Cost

*By Herbert L. Towle in Leslie's Monthly*

The most serious question confronting the prospective automobilist, and the one which he finds hardest to settle, concerns the monthly or yearly cost of keeping his machine. It used to be customary with manufacturers to represent the cost of the gasoline consumed, a gallon in from ten to twenty-five miles, as the only item of expense worth mentioning. Latterly the automobilist has begun to realize that depreciation and tire expenses are items so large that by comparison, the fuel cost itself is almost negligible.

The man with whom cost is an important item will naturally begin with a small machine in order to get through his novitiate at small expense. When he has mastered the runabout, a large car will offer few difficulties, and, if he prefers to cling to the light machine, he will still have a means of transport costing little more to keep than a horse, and of far greater serviceability and endurance. The light car, therefore, is with the beginner the crux of the argument, and this article, will be devoted to it exclusively.

The principal items of cost with any automobilist will be the depreciation, tire bills, repairs and interest on first cost; and the first three may vary within wide limits, according to the make of the machine, and the care and intelligence with which it is

handled. Automobiles are steadily being improved, and year by year successful management is reduced to, one may say, a matter of sympathetic treatment, of inspection, cleaning, adjustment and refraining from abuse. And yet it is doubtful if the automobile will ever reach the point where it simply needs to be supplied with fuel and water, cleaned and let alone. It will always make some demand on the mechanical sense of its user, and the man who cannot recognize and respond to that demand, correcting small faults before they lead to worse, will always have his troubles.

For the confirmed mechanical bungler, therefore., I have no encouragement, statistical or moral, to offer. But, thank heaven, there are not many who cannot, if they will, learn the function of a carbureter, the meaning of an indicator card and the proper way to shift the gears. Such readers may study the first columns in the accompanying tables with the assurance that their own probable experience is there, with reasonable exactitude, set forth. In the first table the purchase price of a new car is $1,000, which is a little higher than the average cost of the popular light road cars for two or four people. Two columns of costs are given; one for the average user, who does the best he can, but is not aided by any special mechanical training; the other, a list of "minimum" costs to which an owner of good mechanical judgment, though not necessarily a shop man, may hope to attain with a reliable car. According to the user the life of a car is taken as twenty-eight thousands and thirty-six thousand miles, respectively. In each case the car is supposed to be run four thousand miles a year, and to be sold at the end of the third year. The depreciation in three years is taken as the loss in selling value, which, of course, covers appearance and style, as well as actual wear and tear.

To complete the comparison, the same car is supposed to be purchased again at the end of its third year, at a small advance over the selling price, and its average cost is estimated for the remaining years of its life. It will be noted that the four items affected are the interest on first cost, depreciation, repairs and insurance, of which the first, third and fourth are self-explanatory. As regards repairs, it should be said that, if anything, the estimates are higher than they need be. There are plenty of owners who run their cars through the first year or two with repair bills amounting to no more dollars than they have fingers and toes, but these are the very successful owners of the very best machines, and their average expenses have been multiplied several times to fit the ordinary case. In the latter half of a machine's life, repairs are a quite uncertain quantity. The life itself of a machine is very indefinite, as, of the parts needing repairs, some may be replaced at small cost, and others may be refitted without being replaced, and made as good as new. In this sense it is obvious that a machine might last forever, one and another part being renewed as it wore out; but practically it is fair to assume that its life is ended when the annual cost of repairs and renewals equals the selling value of the machine.

Regarding the other items, the most uncertain is certainly that of tire cost. The costs per mile assumed here for tires, viz., three cents and one and one-half cents respectively, are certainly lower than those experienced by many owners. On the other hand, I believe that they are reasonable and even ample for cars whose tires are not too small to carry their load easily, and whose owners take the trouble to keep the cases in condition, cementing up cuts and recovering the threads as they become worn. It is true that punctures are a lottery, especially in the city, but the figures here ought to be a good average from year to year.

Gasoline is taken at twenty cents per gallon, and consumption one-twentieth of a gallon to the mile, which is a fair figure for a light or medium weight gasoline car. A steamer will run from ten to fifteen miles on a gallon, according to its weight and horse-power. As the owner is supposed to live in the country or suburbs, where he can house his own machine, a nominal figure for interest and depreciation on the stable has been assumed.

On comparing the tables, it will be seen that, in spite of the higher costs of repairs and renewals, the beginner will find it cheapest to start out with a good, second-hand car; that is, always provided you know enough about mechanics to tell a sound car from one probably apt to break down in the near future.

Of course, one should always take counsel of a mechanical friend when buying a second-hand car, or it may prove the poorest kind of economy. The fact that a car runs well in a demonstration ride proves next to nothing about its real value.

We may sum up, then, by saying that the man of at least elementary mechanical tastes, who is willing to study his machine, may count on its costing him for keep little more than a horse, while it opens a field

# The How and Why of the Automobile

A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

## INTRODUCTION

**General Theory of Internal Combustion Engines.**— People in general who are not familiar with the theory of the gas engine are very apt to believe that there is something mysterious about it which makes its construction and operation so complicated that they are incapable of understanding it. This is really not true. As far as the theory is concerned nothing is more commonplace and more easily understood.

If someone should tell you that nearly everyone has probably at some time or other in his life operated a gas engine you would be inclined to think that he was a candidate for an insane asylum. But let us see. Have you not at some time in your life shot off a rifle or a revolver? Did you realize at the time that the weapon in your hand was nothing more or less than one form of gas engine? Probably this may be shown to the best advantage by considering the operation of an old "muzzle loader." You will remember in order to load the gun the powder and bullets were put into the muzzle then rammed down or compressed by a ramrod, fired by a cap placed under the hammer and finally the barrel cleaned out again by means of a rag fitted on the other end of the ram-rod.

Now this, as far as the operation is concerned, is just what happens in a gas engine. In order to carry the comparison further, let us suppose that we are able to connect the bullet with some sort of a rod so that its energy is converted into rotary motion and used to turn a wheel. Then, instead of using all this force to carry itself through the air it would only carry a short distance, and would store up its energy in the revolving wheel. Last, if we could supply a simple mechanism which would introduce and fire new charges at regular intervals, you can see that our wheel would be kept in motion and the power developed could be used for driving purposes.

Now, having considered one of the specific cases, let us look into the general theory upon which the internal combustion engine works. The general theory upon which any heat engine operates is, that a gas when heated, expands and consequently either increases its volume or its pressure, according as the walls of the containing vessel move or remain fixed.

Thus it will be seen that if any gas is enclosed in the vessel (as shown in Fig. 1) and heated by means of a jet placed underneath, that the contents will be raised in temperature, and in trying to accommodate themselves to a new condition, will either push the piston up, thus increasing in volume in its effort to maintain constant pressure, or will exert an increased

Emery and powdered glass will be furnished at the desk for the use of guests who feel like grinding their teeth.

Your correspondent was pushed out of the garage after getting the above facts (being unable to start up), and is sending these along with some degree of diffidence as it may appear to be too much of an advertisement to appear at less than your regular rates per.

In case you do not use it, hang it up in the office as a warning to any one having a desire to break into the automobile business by way of the second story window—as showing what their finish will be like after five years.

It also shows a dealer's condition at 3:30 A. M. after laying awake all night wondering what he will do with all his money in the fall, after a prosperous season and the second hand machines have been disposed of.

The nearest to a conclusion arrived at was to let Carnegie hold it in trust and take his note for it.

## A Novel Automobile

Perhaps the most novel of American traction vehicles is a windmill automobile now in use on the farm of the builder in South Dakota. The frame on which the windmill tower is built is a triangle, the center beam being 2 by 6 and 12 feet long, resting on the guide-wheels at the front and by the axle at the rear. Two 2 by 4's extend from this beam at about half the distance to the outside of the rear. Ten inches in front of the axle is another 2 by 6, extending crosswise and resting on the beam and side bars, thereby forming a triangle that will not rock. Two legs of the tower rest on each beam.

The wheel is an 8-foot steel pumper, remodeled into a geared mill by using some old gear. The windmill is all built of old gear, and it was quite a task to find the right sizes and kinds. At first the vane was used, but as this would not hold the wheel in the wind when it was pulling hard, the gear was attached in such a manner that now the wheel can be regulated with the left hand and the speed also. There are times when both hands are needed, and so a screw is used for a steering device and it will stay where it is set.

This machine runs best against the wind. Of course, it will move sidewise to the wind or with it, but always the best against it. In a good wind it will move about three miles an hour and it could be made to run faster. The machine is 12 feet long, 9 feet wide and 12 feet high, weighing about 800 pounds.

## Automobiling in Australia

The frontispiece of this issue shows some very interesting views taken by Messrs. Vincent Rockliff and J. D. Cruickshank of Australia on a unique mortoring tour from Hobart to the Great Lake. The actual time spent in making the trip of 250 miles was 19 hours and 11 minutes. Eight gallons of gasoline was consumed, making the cost of traveling under 10 shillings. The road, as we would judge from the pictures, is considered unfit for motoring.

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Magistrate Leroy B. Crane, of New York, addressing the members of the Automobile Club of America on the subject, "The Automobile and the Magistrate," recently said:

"The law should be more comprehensive, more exacting. There should be a $50 penalty for a first offense, $100 and imprisonment for ten days for a second offense, for a third $200 and twenty days, and for the rest in order.

"I seldom leave the bench on any afternoon without feeling as I go home that some of my children may have been run down by one of your automobiles."

## Automobile in Police Service

The Knox patrol wagon, illustrated above, was recently delivered to the Springfield, Mass., police department. The picture shows Mayor E. E. Stone and Marshall Geo. Stebbins giving the car its first trial. The seats which run lengthwise, with compartments underneath for emergency kits and ropes on one side and a stretcher on the other, will accommodate twelve persons. This is another example of the rapid advance of the automobile in all lines of business and public service.

case and igniting the gas there, thus producing a "back explosion," a wire gauze (S) is placed in the "by-pass." This wire gauze acts on the principle of the Davy or miner's lamp, that is, it allows the gases to pass through, but will not allow a flame to ignite them on the other side. The reason for this is that the gauze conducts the heat away so rapidly that the temperature is not allowed to rise to a point where the gas will be fired.

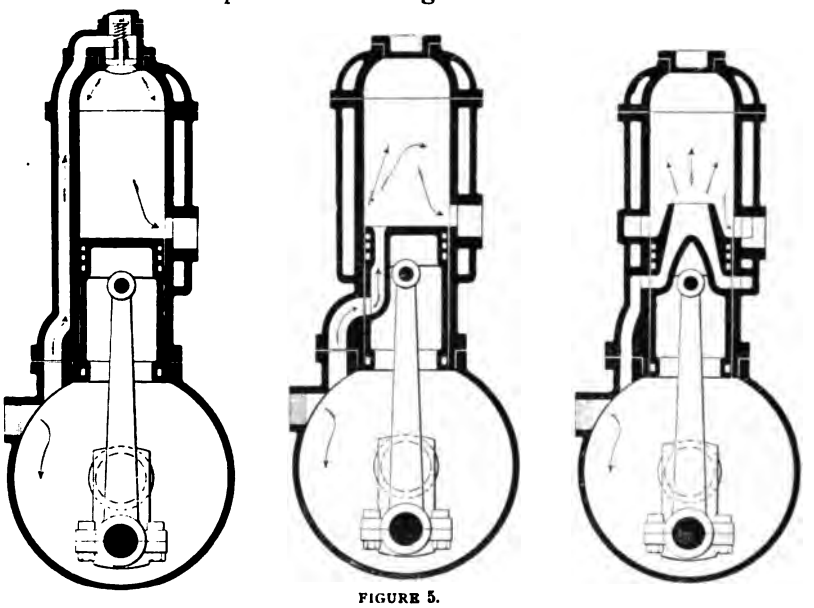


FIGURE 5.

### Advantages of Two Stroke Cycle Motor

1. The same size motor, that is, the same diameter of cylinder and the same stroke ought to give very nearly twice the horse-power that the same size four stroke cycle motor would develop, due, of course, to the fact that there will be an explosion every revolution, whereas in the latter type, there is only one to every two revolutions of the fly wheel.

2. Absence of all valves and valve mechanisms.

3. Absence of cam shaft and cam shaft gears. The only mechanism to be operated mechanically is the commutator, and that, ignition being required every revolution, may be placed on the main shaft. In some cases the piston itself forms a part of the ignition apparatus.

4. Less vibration, due to the fact that the impulses follow each other twice as fast as in the four stroke cycle type, and hence there is a more uniform effort on the crank shaft.

5. Less weight of fly wheel as energy only has to be stored up for one stroke instead of three.

### Disadvantages of Two Stroke Cycle Motor

1. The fresh charge is very likely to be wasted through the exhaust port or the opposite condition may occur, that is, a large amount of burned gas may be left in the cylinder, thus giving a weak mixture.

AT MADISON SQUARE GARDEN.

AT THE PARIS SALON.

be easily machined in a few operations, and as accurately as possible. In order to bring about the above results, auxiliary tools or fixtures called "jigs" are used. These jigs are designed to fit the special work for which they are intended. In order to illustrate let us take the operation of the "boring out" of the cylinder. A jig is made that it will hold four cylinders at a time, two of which may be turned into position in front of a "horizontal boring mill." As soon as one set of cylinders is bored the "bedplate" of the jig is turned upon the center and the other two cylinders come into position. Then while these two are being bored, the first set may be removed and the new ones substituted. This practically makes the operation continuous and increases very materially the output per day. All holes to be drilled or surfaces to be "faced off" are taken care of in much the same way. These considerations enter into the manufacturing side alone, hence are of consequence only insofar as they cheapen first cost.

FIGURE 7.

After a car has left the factory the matter of repairs is apt to be one of vital importance. Consequently, anything which is done to reduce this cost is a step in the right direction. First, all parts of the cylinder, valve chambers, etc., should be readily accessible. Second, all "valve bushings," that is the guides in which the valve stems run, should be removable so as to permit of renewal, should they become worn. The valve seats must be so arranged that the valves may be ground quickly and accurately. No mechanism is perfect and consequently all are subject to wear. Therefore, any precautions which are taken to make the renewal of parts easy, will appeal to the owner of the car and will make for economy in more ways than one.

(*To be continued*)

The attendance on the first day exceeded that of the first day last year by over 30%. It is estimated that the aggregate sales which will be made at this show will reach $4,500.000. This is figuring on a basis of one-seventh of the season's output.

## Among the Clubs

The American Automobile Association held its annual meeting at the Hotel Seville, New York City, Monday afternoon, January 16th.

There are now forty-one clubs belonging to the Association, with a total membership of 4,000, besides 200 individual members.

It was voted to incorporate under the laws of New Jersey.

The officers elected for the ensuing year are as follows:

President, Harlan W. Whipple, Automobile Club of America and Automobile Club of New Jersey; first vice-president, John Farson, Chicago Automobile Club; second vice-president, Judge Wm. H. Hotchkiss, president of the New York State Association of Automobile Clubs; third vice-president, Dr. Millbank Johnson, Los Angeles, Cal., Automobile Club; secretary, C. H. Gillette, Automobile Club of America; treasurer, George E. Farrington, president of the Automobile Club of New Jersey; directors, Elliott C. Lee, Massachusetts Automobile Club; Wm. C. Temple, Pittsburg Automobile Club; Dave H. Morris Automobile Club of America; A. R. Pardington, Long Island Automobile Club; R. L. Lippitt, Rhode Island Automobile Club; Windsor T. White, Cleveland Automobile Club; E. M. Steck. Florida East Coast Automobile Association.

Albert R. Shattuck was appointed chairman of the good roads committee; Augustus A. Post, chairman of the touring committee; James B. Dill, chairman of the law committee, and W. C. Temple was made chairman of the racing board.

The old racing board reported that they had decided to recommend to the new board that no intermediate mile times be accepted in the future. They decided to reject the intermediate miles made by Kaiser, Oldfield and others last year and to accept the mile figure of 53 seconds made by Oldfield at Los Angeles on December 21st. They also accepted Oldfield's record of 3 miles in 2:39 4/5, of 9 miles in 8:04 and 50 miles in 1:12:40 3/5. They also recommended the acceptance of the 100 miles made by E. R. Green with the Pope-Toledo racer at Dallas, Texas.

The members of the racing board for 1905 are as follows: W. K. Vanderbilt, Jr., T. M. Hillyard and George Isham Scott, New York; H. L. Bowden and William Wallace, Boston; George L. Weiss, Cleveland; F. C. Donald, Chicago; R. L. Lippitt, Providence; E. H. R. Green, Dallas, Tex.; technical advisers, A. L. Riker, E. T. Birdsall and Roland White.

The Bay State Automobile Association of Massachusetts, was recently organized with the following officers, viz.: President, Lewis R. Speare; vice-president, Fred Tudor; treasurer, H. L. Bowden; secretary, J. C. Kerrison; board of directors, Harry Fosdick, W. W. Burke, E. A. Gilmore, G. R. Alley and E. R. Benson. The Club is planning an active campaign and has established headquarters at the Hotel Lenox in Boston.

The Rhode Island Automobile Club had its fourth annual banquet at Wellington, Providence, Jan. 4th. The following officers were elected: President, Dr. Julian A. Chase; first vice-president, William Penn Mather; second vice-president, Darwin Almy; treasurer, Howard D. Wilcox; secretary, Elliot Flint.

## Books Received

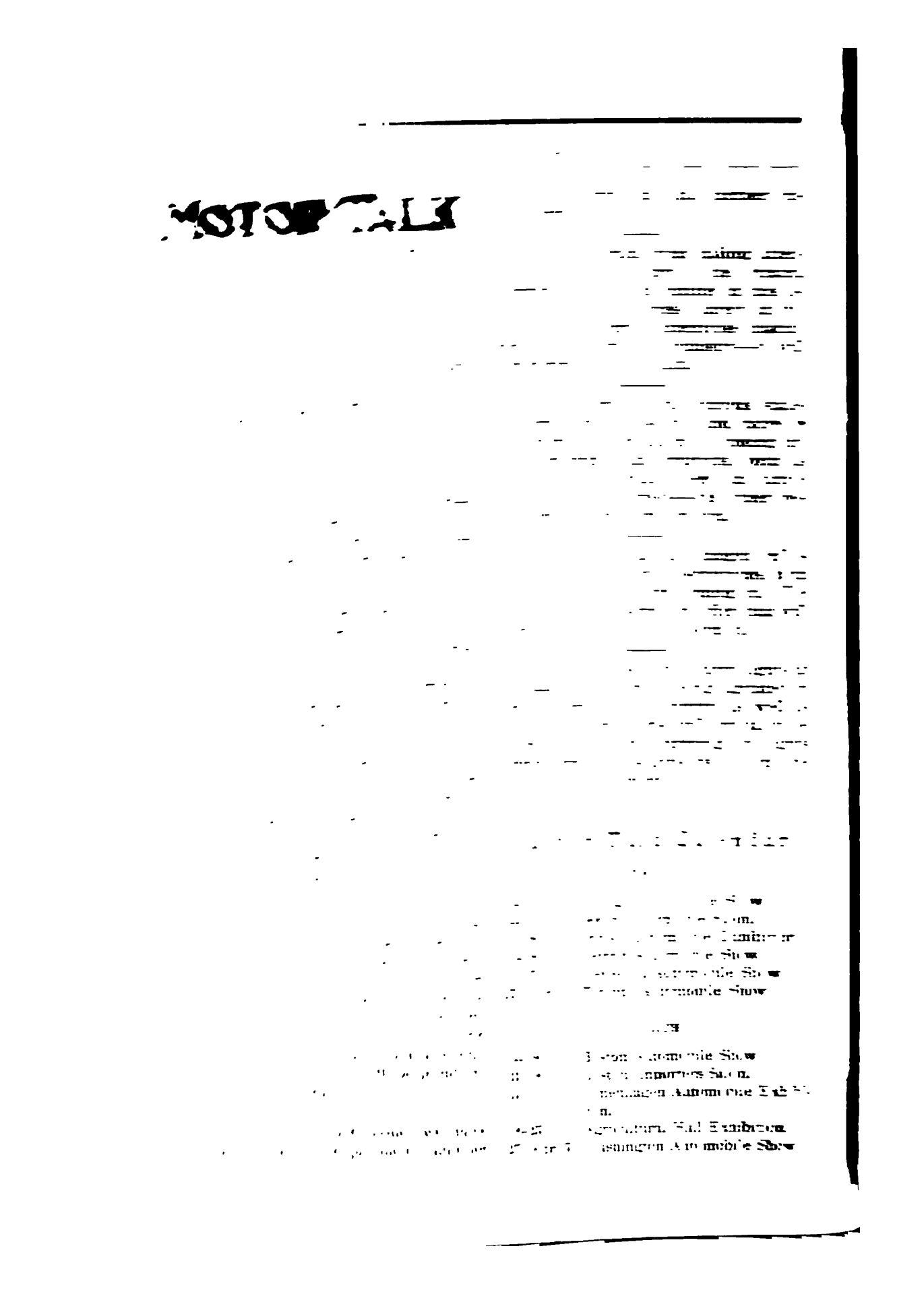
Under this heading will be noted from month to month any books or catalogues sent us which are worthy of especial attention.

"DIAMOND BOOK OF INSTRUCTIONS"—Particularly well printed, full of interesting matter and very valuable to any one interested in automobiles. Address Diamond Rubber Co., Akron, Ohio.

"LIFE"—The issue of Jan. 19, 1905, is a very clever auto number.

"LESLIE'S MONTHLY MAGAZINE"—The February issue is the Second Annual Automobile Review of this excellent magazine. It contains articles on "The American Automobile Industry," by Arthur N. Jervis; "Versatility of the Automobile and Its Increasing Popularity;" "The Question of Cost," by Herbert L. Towle; "What Shall the Speed Limit Be?" by William H. Hotchkiss; "The Automobile as a Prescription," by William G. Eynon, M. D.

"SCIENTIFIC AMERICAN"—The annual automobile issue of this publication appeared January 28th. The issue is a valuable one.



# MOTOR TALK

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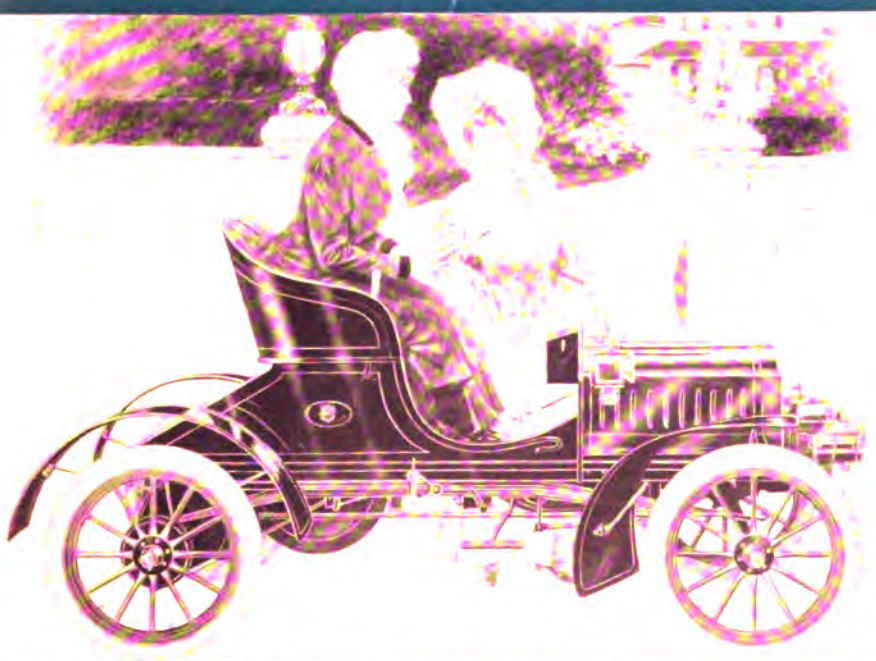
A Magazine of Outdoor Sport



MARCH 1905

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## Olds Motor Works, Detroit, U. S. A.

*Member of Association of Licensed Automobile Manufacturers*

Drawing by Henry Hutt.
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# There is but one Road

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by and in full
view of
the cataract.
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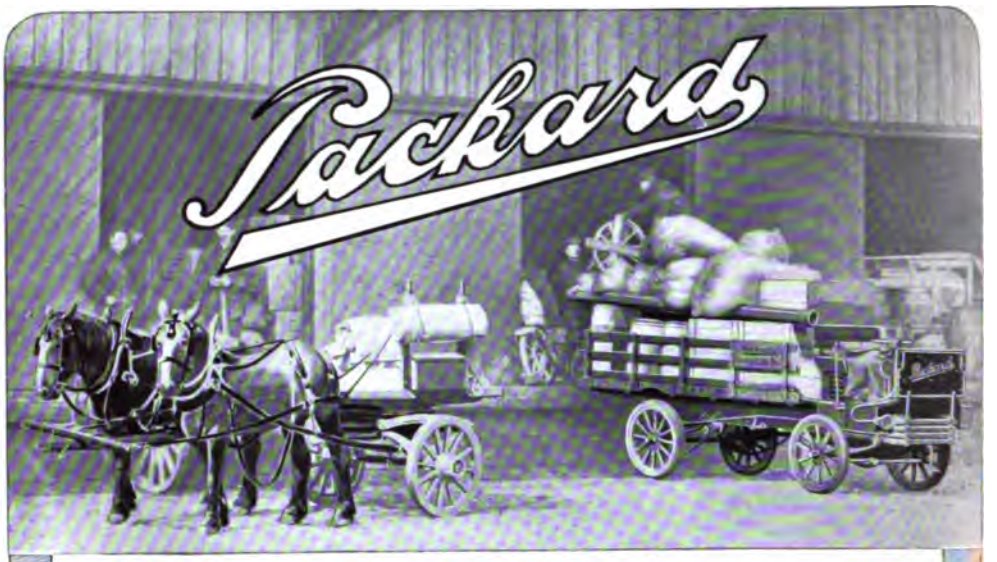


Most manufacturers consider that anything is good enough to go into the building of a truck.

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Small Capacity.

Tearing at binding margin along creased, crimped or perforated lines.

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**Interchangeable Mechanical Construction**—permitting the user to make any repairs caused through neglect or misuse in his own office and allowing the substitution of a larger or smaller lock should business changes necessitate increased or decreased capacity for accounts.

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AUGUSTUS POST IN HIS WHITE STEAMER ON BLUFF POINT, THE HIGHEST POINT ON THE HUDSON RIVER PALISADES.

# MOTOR TALK

**A MAGAZINE OF OUTDOOR SPORT**

VOL. I. MAY, 1905 NO. 5


## The Old National Highway

### An Interesting Account of this Historic Road by Augustus Post, Chairman of the A. A. A. Touring Committee

ALL roads may be divided into two classes, natural and artificial; natural roads can be further divided into two general classes, as portage roads and highways. Portage roads are those leading from one body of water or the head of a river to another water way. Such you will still find in the forests of Canada, or in the woods of Maine, where the canoe is the buggy of the native. Highways are those paths originally the trails of animals and Indians which sought the high ground to get away from the water which settles in the low places and also to save the constant climbing up and down the foot hills, which would be necessary if you did not follow the top of the ridge; especially is this true in some parts of this country, where the soil is easily washed, making a series of ribs so to speak, each side of a backbone. From this natural reason, which was instinct with the great herds of buffalo and other migratory animals, we get the name highway as applied to all traveled roads, and then King's highway, where they were built by and maintained by the King, for the good and use of all the subjects; and still further, national highway, where the road was of national importance.

Artificial roads I would designate as streets, avenues and boulevards, which are laid out and constructed irrespective of natural conditions, going over viaducts and cutting through hills, as seen in parks and suburban districts. Railroads are in this class; of course they take into consideration natural conditions when going through mountainous or hilly districts. The ideal road would be artificial, as far as expense and practicability would allow.

The national highway proper was a portage road leading from Cumberland, Md., the head of navigation on the Potomac River, to Wheeling, W. Va., on the Ohio, from whence boats could take passengers and freight down to the Mississippi. At the time just before this road was built, many different countries were exerting spheres of influence in various parts of this country, as is the situation in China today. The French were dominant in Canada and even as far south as Fort Du Quesne, the present site of Pittsburg. The Jesuit priests were traveling down the Ohio river to meet their brothers coming up the Mississippi; there was a strong chance of the middle west joining the Louisiana provinces, where the French in New Orleans were so strongly intrenched, and even the Spanish had their eyes on a large slice of territory.

Washington and friends of his had been granted a large tract of land in what is now West Virginia, and it was natural that he should be sent to see what the situation was and how the west could be united to the New England colonies. There were two schemes on foot at that time, a canal across New York State, and a military road from the Potomac to the Ohio. Washington's journey, taken over what was then known as "Nemacolin's Path," named after an old Indian Chief, served to show how firmly intrenched the French were; his small band was roughly treated, Washington himself returning with great difficulty and inconvenience. The next year General Braddock was sent out by orders from England, with an army and swivel guns to take possession of the country and drive out the French. This was the beginning of The Old Cumberland road, later to be so famous, and destined to play so great a part in the history of this country. Men were sent ahead to chop down the trees and make bridges, and the army

moved forward, dragging the cannon and wagons with supplies over the mountains.

Last summer when I passed over these ridges I could see in places where this old road went, and it still can be followed for many miles where it is not used by the route of the present road.

This expedition had a sad ending. The French came out to meet them before they had reached Fort Du Quesne, and one of the most desperate battles with the French and Indians took place. General Braddock himself was killed and later buried in the middle of the road over which the retreat was made, so that the Indians could not find the grave nor dig it up to mutilate his body. The spot of Braddock's grave is still to be found, and you will find it marked on the U. S. Typographical Map of this section, which is very good and very accurate. The French were afterwards defeated by the English at Quebec, and their influence in this part of the country weakened.

For many years the agitation was kept up to have the national government appropriate money to build a suitable road over this route. There was a large and growing travel, and it was the natural direction of the expansion of the country westward. There were two opposing parties in this matter, the one which claimed the national government had no right to spend public money for such an internal purpose, arguing that the states only had the right to build roads within their borders; the other party, headed by Henry Clay, often called the father of the national highway, and in memory of whom a handsome monument was afterwards erected just outside of Wheeling, contended that this undertaking was well within the constitutional rights of the national government, and a necessity in time of war. This became in its day a burning national political question. Finally the bill was passed, and the road was built by contract, under the supervision of the army engineers. There was a commission

VIADUCT ON NATIONAL HIGHWAY IN INDIANA.

CUMBERLAND NOTCH, MD.

appointed who went over every available route and finally decided to strike the Ohio River at what is now Wheeling. The cost of both the Eastern and Western divisions from the Ohio River was about seven and a half millions. When Ohio was admitted as a state, a clause was introduced into its charter which said that five per cent of the amount obtained from the sale of public lands should be devoted to building this highway, three per cent of the five toward that portion within the state, and the remaining two per cent to portions outside the state. This same arrangement was made when Indiana was admitted to statehood, and by this means the highway was extended west over what was then known as Zane's trail, or a trail laid out by Col. Ebenezer Zane, after whom Zanesville, Ohio, is named. The road passed through

NATIONAL HIGHWAY - APPROACHING ALLEGHENY.

Columbus and Springfield, Ohio, and Richmond, Indianapolis and Terre Haute, Ind., and later extended as far as Vandalia, Ill., where it comes to an abrupt end, after going over a very pretentious embankment, several miles long, and remarkably well built. At the time the road reached this point, there was a great deal of doubt whether East St. Louis or Alton would be the metropolis. Such an idea as a large city on the other side of the Mississippi River seemed preposterous, so while waiting to see which way to go, the birth of a new idea took place and the railroad promoters came into the field. They said that the rails would be laid through every street and over every road in the country and that cars could be pulled so much easier on rails that there would be no further need for ordinary roads. The cars would come up to every door. How little did they know whereof they spoke! The railroad did stop the building of roads, for through lines of travel in this country. Although in Europe all the roads had been built and well built before the locomotive was developed, in this country we had just begun to build roads and some companies had been formed to build toll roads or turnpikes, so named from the "pike" which used to be swung across the road to stop travelers until they paid. Many of these companies paid very handsome dividends. All this private enterprise and capital was now turned toward building railways and it is not surprising that we have the best railroad systems in the world. What if they *had been* forced to use the ordinary highway for their locomotive? What if they *are* forced to use the highway to supplement and complete the promise to have cars come up to every door and to reap the dividends which are still awaiting the enterprising and energetic? What then will be the state of perfection of the road bed and surface of our highways?

In driving over the old road it is impossible to escape from its fascination. Every mile you pass, in the western section, over the rolling prairies, a stone mile post, weather-beaten and almost illegible by the action of time; in the eastern section, over the Allegheny mountain ranges, the iron shell posts still stand, rusty, but almost as good as the day they were put up. There used to be sun dials for the convenience of travelers, but they have almost all been taken away to grace the front yards of the old houses which are many of them former taverns, of generous proportions and English colonial architecture, with immense double chimneys at either end, suggesting the tremendous old fire places which made the wintry and stormy nights cheerful for the travelers who had to partake of their hospitality. The life on the road is brought back; you can almost picture to yourself the old coaches rumbling along day and night, changing horses at the stations; sometimes before the coach had stopped rocking a new team would be

OVERFLOW CHESAPEAKE AND OHIO CANAL.

ready to continue the journey. Many famous statesmen rode over the route on their way to and from Washington. All the news was carried by coach, and how the people would crowd around at the time of an election, or some other equally important event! There still can be seen the old barns where the freight teams and wagons would put up, some with wheels ten feet high and carrying as much as a a hundred hundred, or about five tons, and when the roads were icy and covered with snow, it was very serious business going up and down the long, steep grades. They had chains that were put around the wheels and a log sometimes was dragged behind, as they still do in California; or they had what was called a "clevis," something like a plow that dug into the ice and held the wagon back.

What would the people of those days say to see an automobile passing over that road from St. Louis to New York, eleven hundred miles, in a week! What will the people of *these days* think when there is a renewed surface on that road and there is a stream of automobiles passing over this boulevard from the east and from the west, when road races will be run on parts of it at the rate of over sixty miles an hour, and possibly run for a distance of a thousand miles! When every farmer in the state of Indiana can take advantage of the beautiful gravel roads of that state, many from the East can find a new and beautiful cruising ground with roads suited to his comfort, and the westerner may have an historical highway and boulevard to travel East in the summer to spend his vacation at the resorts along the Atlantic coast, passing by the battlefield of Gettysburg, a pilgrimage everyone ought to make, whether owner of an automobile or not.

Such is a picture of the future, when the most ambitious statements of the locomotive and railroad promoters will come true, who might have said as well as of the railroad, that street railroads, will pass almost every house in the city, and as well as the locomotive, that the automobile will come up to every door in the country. And it certainly will, if the road is improved to keep pace with the improvement in locomotion.

NATIONAL HIGHWAY AT DEER CREEK, 10 MILES EAST OF TERRE HAUTE, IND. *Photo by P. S. Rush.*

# Motorbuses in London

## An Article Showing the Rapid Development of the Commercial Vehicle in the English Metropolis

MANY tentative efforts have been made to adapt the self-propelled stagecoach to metropolitan conditions, and out of them several styles of motors have survived as suited to 'bus purposes. The points claimed in favor of each style are cheapness, trustworthiness, comparative simplicity in handling, and freedom from noise and odor. Each of the great London omnibus companies has adopted its type of motor car, and each is striving to see which will be the first to make the change in locomotive power. The first installment of the new autocars are now running for hire, and are taking their turn in the long procession of the streets.

London is, without doubt, the chief 'bus-using city of the world. It is estimated that there are about 2,500 omnibuses in that city. To replace them, reckoning two motorbuses to three horse omnibuses, would require over 1,600 autobuses at least, but more likely 2,000 will be necessary, for on some of the routes small single-decked vehicles will be used. The field is a very large one, and the replacement of horses by motors will not be a matter of months, but of years.

The London General Omnibus Company, which, as the greatest of the 'bus companies, had most to lose by any wrong step, deliberated over the idea for some years before it began to change its motive power. It has had two motorbuses running for a few weeks, and the trials have been so satisfactory that the company has decided to turn its 1,600 horse 'buses into motorbuses by mounting them on motor chasses. Two types of 'buses have been chosen. The speed of one type will be about 11 miles an hour, and it will carry the usual 26 passengers. The other type is a steam car with no roof seats, which is intended to carry 16 passengers, but the police will not allow the two front seats beside the driver and the single seat beside the conductor to be used.

A few figures may be interesting as showing what the motorbus is capable of, and how it compares with other public conveyances. Armed with a stop watch, a representative of one of the London newspapers recently journeyed from Oxford circus to Rye lane, Peckham, by one of the motorbuses. The distance is 5¼ miles. The total running time from start to finish was 38 minutes. The total time of twelve stoppages to pick up or set down passengers—delays due to traffic were not timed—amounted to 3 minutes 40 seconds; therefore 5¼ miles were covered in 34 minutes 20 seconds, showing an average speed of slightly under 10 miles an hour. This, of course, means that much of the journey was done at the rate of 12 miles or more per hour. It is instructive to note that the longest stoppage, at Camberwell green, was of 35 seconds; and on three occasions the 'bus stopped, set down or took up passengers, and started again in 5 seconds.

NATIONAL HIGHWAY—BRIDGING THE CULVERT.

From Westminster Bridge to Rye lane the 'bus occupied 22 minutes for the 3½ miles, and the stoppages were 1 minute 50 seconds. On the Westminster Bridge road it overtook one horse-drawn 'bus, and arrived at the terminus at the same moment as another. As the horsed 'buses run at 5-minute intervals, the motorbus gained that time in about 3 miles. In the Walworth road it passed an electric tramcar, and another reached the end of the journey just ahead of it, showing a considerable gain in this case also on the part of the motorbus.

The representative traveled back to Westminster by electric tram for the sake of

comparison. The tram took 30 minutes to the motorbus's 22 minutes, but it made sixteen stoppages to the bus's six. The whole delay through stoppage was 3 minutes 43 seconds against the bus's 1 minute 50 seconds. The tramcar's arrests were usually much briefer than those of the bus, twice being only 3 seconds. Although the tramcar took 26 minutes 17 seconds for the 3½ miles, as compared with the bus's 20 minutes 10 seconds, the maximum speed attained was higher, probably 15 miles an hour. But the tramcar was constantly delayed by traffic on the lines. This is the reason why motorbuses will inevitably prove faster than tramcars. The 'buses, indeed, would travel more quickly over the journey if they were not frequently obstructed by stationary tramcars in the middle of the road. These figures are useful as illustrating how formidable the motorbus may prove to the tramcar. * * *

One of the chief points in favor of the motorbus is the additional street room gained through the displacement of the horse. Another is the saving to the pavements. There will be no pounding of the road surfaces by hammering hoofs, and scarcely any grinding of them by iron-shod tires. This will make it possible to keep the main thoroughfares in good condition in nearly all weathers. Something, too, should be accomplished to relieve the congestion of street traffic, which tends to render life in great cities more uncomfortable. The car carrying 40 or 50 passengers will occupy less space than an omnibus with its pair of horses. It will be handled more easily, and it will move quicker.

The utilitarianism of the motor is another point in its favor. It readily adapts itself to any conditions. Some of the railways in England are running single motor carriages as being cheaper than steam locomotion for certain purposes. Others again are experimenting successfully with the idea of instituting motor services on the roads in out-of-the-way places to act as feeders to their main lines.

All this is said in favor of motorbuses. But, on the other hand, it is urged that if, in the haste to change, carelessly built motorbuses should be placed on the street the attempt will end in failure.

Two of the directors of the London Motor Omnibus Company, who have had experience in the working of motor omnibuses, have prepared an estimate of the profits to be derived from the company's business. They consider that each motor omnibus of the company should have a minimum average run of 90 miles per day, and should earn a net profit of at least 4 cents per mile, or $3.60 per day, or $21.60 per week of six days. In arriving at this estimate of profit they have taken into account the conditions under which a company would work in London, and they are of opinion that their estimate of 4 cents per mile per omnibus should be naturally increased as the company's business develops, and also having regard to the fact that the Birmingham company is actually earning an average of 6 cents per mile on an average run for each omnibus of 90 miles per day.

Another estimate, of a different character, appears in the London Electrician. It is by an expert, and is as follows:

"The working cost of a motor omnibus, including repairs, is from 23 to 24 cents per car mile, and its carrying capacity 34 passengers. The working cost of an electric tramcar is from 10 to 12 cents per car mile, and its carrying capacity from 50 to 70 passengers. The much greater margin between working expenses and earning power is far more than sufficient to cover the disbursements put upon the tramway owner for capital charges, track maintenance, paving maintenance and rates wherever anything approaching a frequent service is demanded."

NATIONAL HIGHWAY—SAVING THE BRAKES ON A LONG GRADE.

Other countries are adopting the motorbus, as the following shows: The Italian Gazzetta Ufficiale of February 13 publishes a law authorizing the minister of public works to grant subsidies for the establishment and working of automobile services in districts which are not served by railways and tramways. The annual subsidy shall not exceed $121.66 per kiiometer (0.6214 mile), for a service carrying passengers, luggage, and goods; $77.86 per kilometer for a service carrying only passengers, luggage, and small agricultural produce; and $38.93 per kilometer for a service carrying only goods. The subsidy shall be granted for a term of not more than ten years, which term may be renewed.

AUTOMOBILING IN ALGIERS.

# Round the Mountain

## An Account of a Motor Drive from Cape Town, by J. M. P. M.

*From The Car, London*

TABLE MOUNTAIN with its nightcap of fleecy white cloud is familiar to nearly everyone, at any rate from pictures, and those who have been privileged to see it know something of its rugged magnificence; but to fully grasp its beauty and solemn grandeur one really requires to drive round it, a distance of 32½ miles.

The drive round the mountain, made possible by the Victoria Road, a fine piece of engineering skill, is quite a regular Sunday trip for holiday makers, who start early in a landau and four, driven either by a picturesque Malay in enormous straw hat, or by a black boy clad in orthodox livery with a face as shiny as his boots, and a grin of surpassing magnitude; and while the drive will always be a pleasure, even by horse and cart, owing to the perfect scenery, yet one feels so sorry for the horses going up the long steep hills in a hot sun, that to the "merciful man" the pleasure is much greater in a motor-car, and to the keen motorist it is joy indeed.

The American South Atlantic squadron was in Cape Town recently, and the admiral and officers were driven in cars lent by the members of the South African Automobile Club round the mountain, which they greatly enjoyed; and Princess Christian, on her recent visit, also went the orthodox trip, driven by the president of the Club, who unfortunately is at present in a hospital with a badly fractured arm, the result of his 10 h. p. Lancaster upsetting in the recent 100 miles Reliability Trials.

One very hot Sunday lately, when life

VICTORIA ROAD.

indoors was a burden, the mountain drive seemed to possess such a fascination that the 5 h. p. Oldsmobile was fetched out of its galvanized iron shed, and at 3:30 p. m. started off in search of coolness. We started from Claremont, a suburb six miles from Cape Town, and ran through the other suburbs of Rondebosch, Mowbray and Woodstock, blessing (?) the Tramway Company for watering their lines to an extent that made skidding inevitable; passing through Cape Town, sweltering in baking, glaring sunshine, and wearing a depressing air of Sabbath calm and unctuous respectability; past Green Point Common, once the home of Boer prisoners (who were much keener on the Psalms of David than on the uses of cold water), and now happily devoted to the pleasures of peace in the shape of an industrial exhibition; past Sea Point with its pretty villas and semi-tropical vegetaion; and then leaving the suburbs proper we wound round the sharp curves of the Victoria Road, cut out of the cliffs, with the sea breaking sonorously on the rocks below on the right, and, with many hoots rendered necessary by the constant curves, we flew past the Cliftonville Hotel, where we had some difficulty in avoiding dealing out death to one or other of the noisy "friends of man."

We then came to Camps Bay, where an enterprising company has erected a huge concert hall and made frantic endeavors to create a fashionable watering place, with the result that a local Margate has been produced. Shortly after leaving Camps Bay with the huge mass of mountain known as the Twelve Apostles on the left, and the sea a deep sombre blue stretching far away on the right till it met a brazen horizon, the road began to rise very gradually at first, and we approached Houts Bay Nek with the lovely bay of Llandudno hundreds of feet below. The gradiant was sufficiently severe to make the Oldsmobile signify its disapproval of being expected to climb on its higher speed-gear by a series of prodigious pounding, which promptly ceased on the low gear being put in.

Now a 5 h. p. "Olds," on its low gear is a very fine hill-climbing performer, but the pace, while such as would satisfy even a London policeman, is a bit trying to the temper with a pitiless sun catching the back of your neck and no shade of any sort; still, there is a hotel further on, and even the longest hill has a summit. The top was ultimately reached and we found it peopled by sweating and profane cyclists. A little more of that hill and even the virtuous motorist might have fallen away from grace and been found joining the cyclists' blasphemous chorus concerning the climate.

A run down the steep hill with engines stopped brought us with a forty-dollar thirst to the Royal Hotel, Houts Bay, and 14½ miles from Cape Town, where two drouthy De Dions were peacefully at rest beneath the oaks having their watertanks filled, whilst their owners took shelter from the scorching rays of the sun. We were also glad to call a halt here, and then after resting in peace the real pleasing coolness for an hour the three cars started off together, the De Dions going first and making an unseemly dust; that is the worst of cars with their frames so near the ground, and their name is legion. They not only fill the air with horrid, choking red African dust, but cannot run over a dog without

CLIFTONVILLE.

hurting him. Now our Oldsmobile car ran over a dog the other day and he ran away laughing. We were glad when the other cars went off to Cape Town by the way we had come, and we continued our climb over Constancia Nek slowly but surely, and with an enjoyable breeze blowing. Once on the top we very quickly descended the steep road, passing through lustrous groves of quivering silver-leaf trees, and vineyards green and smiling in the ruddy glow of the setting sun. And so through Wynberg, with its church bells ringing for evening prayer, we got back to Claremont in comfortable time for dinner, having been once more "Round the Mountain."

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In August, France is to have a really important reliability trial for commercial cars. Elaborate preparations are being made and it is expected that the event will do much to stimulate interest in this branch of the automobile industry. A number of entries have already been made both of foreign and American cars and many more are expected.

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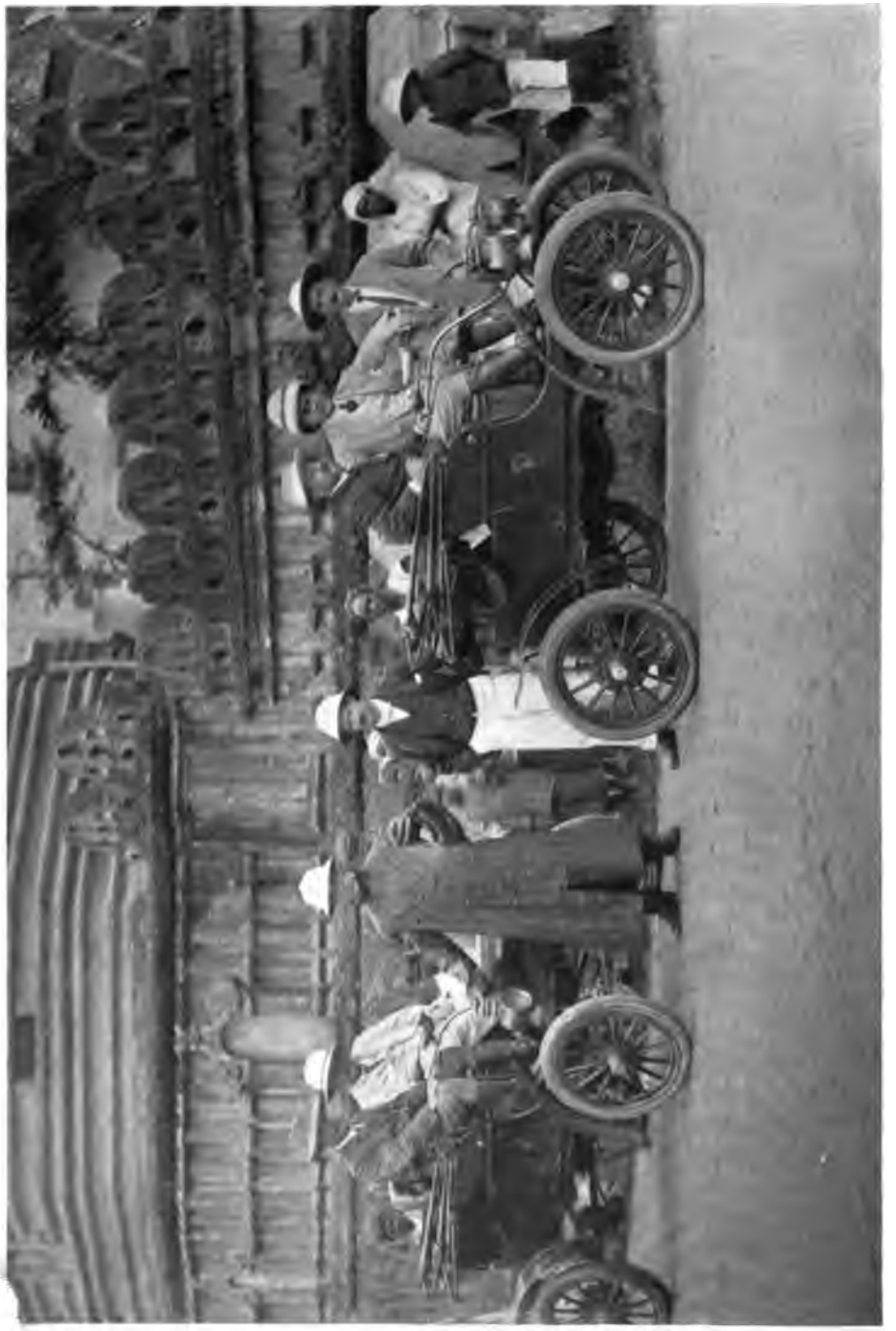
Two new motorbus transportation companies have recently been organized in London, England, one with $2,000,000 capital and the other with $1,000,000 capital.



AUTOMOBILING IN CEYLON.

# Automobiling in Ceylon

## An Account Taken from Notes Made on the Trip by Mr. C. R. Bissell

OUR first day's run out from Madras was a nice little ride of some eighty miles. The second day we started at 7 o'clock in the morning and rode till 11 o'clock at night. The last five hours were consumed in going through a pucca jungle—where the road resembled the dried up bed of a mountain stream. Rocks, ruts, and ditches and the like, made the surface, and the sides, lined with prickly pear bushes, meant that if the tire should hit one of these, we would have a puncture. The road was only about a foot wider than the track of the machine and at times the rear axle would drag along the ground and we would have to rush the car full speed to be able to get over at all. Twice we had to lift the car out of one of these places and to add to our discomfort it was pitch dark and raining cats and dogs—besides 260 lbs. of luggage on the rear—and a good part of the way I carried in addition a native guide.

The performance of the car was nothing less than marvelous and I am willing to bet my last dollar that there is not another machine that will take that day's trip under the same conditions that we did without breaking down. Nine out of ten of the cars have not enough clearance for these roads and in this respect, the Oldsmobile is well adapted for India.

When we reached Kuppun that night we were unable to find any place to sleep, except on the hard benches of the station—nothing to eat but whiskey and soda, and I felt like giving up the ghost. Or course, we had no dry things with us in the way of outside clothes, and I do not understand why both of us were not taken down sick.

The next morning I found a punctured tire which had evidently occurred just as we entered Kuppun the night before.

Our trip next day was over just as bad roads as we had encountered the night before, but they were wider and being daylight we were able to get along a great deal better. We spent two days at Merri-Kuppun, where the gold fields are situated.

We then went on to Bungalore and being unable to obtain any petrol, we had to run on kerosene. The car runs equally well on this and for starting it cold, a piece of waste saturated with petrol is stuck in the air suction, to give it the necessary heat for vapourizing the kerosene. The rest of the trip was completed, using kerosene alone. We spent two days in Bungalore.

Then we went on to Mysore, where the Mahrajah of that province and of the same name, lives. We arrived there in the midst of his regular annual durbar, and the town was overcrowded with people. Mr. Frank Arbuthnot arrived the same day by train, we having raced him up from Bungalore, and our actual running time was some half hour less than that taken by the steam engine over the 80 miles. This was rather interesting, as at times we would run along side by side and then pass them, then be passed and so on.

We remained here four days. The night before we left, the grand procession took place and getting all our cheek together, we shoved our machine into the line of the parade and were salaamed several times by his highness.

From Mysore, we went on to Octacamund. This is a distance of some ninety miles and took us some thirteen hours. The last fifteen minutes were occupied in ascending the steepest Ghauts imaginable, the grade averaging between 20 to 25 per cent and the road twisting and turning at right angles every 100 feet. With all the luggage on, Mr. Moore was forced to walk and in parts we required the aid of coolies who thought we were good things and pushed us along. Here we had our only accident on the trip and having stopped on a 25 per cent grade, we attempted to start and snapped our chain. However, we reached Ooti that night, almost frozen to the marrow as it was very, very cold.

The next morning we rode down to Wellington and here gave our machine a thorough looking over and cleaning. From here Mr. Moore and I returned to Madras, after what was truly a remarkable trip.

A RAILROAD AUTOMOBILE.

## A Railroad Inspection Car

While in America recently Mr. Wm. Letts, of Jarrott and Letts, made a run of 150 miles on the Oldsmobile railway car which this firm have designed for use on the railway. "I may say," he writes, "that I remember nothing so exciting as this run on the rails. The sensation of traveling at the speed of an express train is wonderful. This car is fitted with a 9 h. p. engine, and when I tell you it will do forty miles an hour I am not exaggerating, because we did it. It is very funny to drive the car and have nothing to do but put in the top gear and let her go. Of course, there is no steering to do, but the most exciting time is when passing an express train. Really, for a minute or two it makes your heart come up. I am going to try and get the railway companies here to take up these little cars on some of their short lines where there are only one or two trains a day. Then they would be most useful in dispatching parcels, as well as for inspecting the railroad. Four men can lift the whole thing off the line if necessary."—The Car, London.

The roads in Sweden are fairly good, but cannot be considered ideal for automobile travel. They are, as a rule, rather narrow and sloping too much from the middle toward the sides, not to mention steep hills in certain places. The motor cars are mostly used within the city limits, and only occasionally on longer tours. In the southern part of the country the roads are better, however.

As far as motor car traffic is concerned, Sweden is a field not yet developed, and the American manufacturers ought to have about the same chances to sell as those of France or Germany. An obstacle, however, is that the United States is more distant, causing higher transportation costs and longer time in delivery, and European manufacturers can send representatives there easier and cheaper. Motor cars, including heavy motor truck, are also made in Sweden, but on a smaller scale.

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There are now in Gottenborg, Sweden, according to the U. S. consul, fourteen motor cars of different types, and of French, Swedish, German and American manufacture. There are also some motor cycles of German make.

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*Leslies' Weekly, New York*, now runs a regular automobile feature in shape of a page edited by Alex. Schwalback.

# Camping Out With An Automobile

## A Practical Article by Hrolf Wisby, Containing Many Valuable Suggestions

*From Outing*

THERE is as much difference between touring in the ordinary way, and camping out with your machine, as there is between a stroll down the avenue and a cross-country tramp. Everybody is familiar with touring in its usual aspect, but few know anything about camping out, and still fewer attempt it. A little experience and a good deal of forethought will enable you to "live with" your auto and make a decent showing, even if you don't combine the qualities of a woodcraftsman and a scout. In a little while you will want to be distinguished from the mere tourist, as the voyageur from the ordinary traveler.

Automobile camping stands apart from any other branch of the sport. It is neither touring nor racing. It is modern man brought back to Nature on the latest vehicle of civilization. It is closing in an embrace with mother earth, yet not locked with her in the compass of a day's slow tramp, but free to roam, to camp, and to change your ground at will, to surmount the obstacles of the open country, to annihilate the wearying consideration of time and distance. It is terrestial man, gifted by an almost aerial mobility—a gift of his own ingenious giving, even more remarkable than the nomadic roving of Bedouin sheiks.

The first thing to do is to select your route carefuly. The chart will not tell you everything. Some judgment is necessary to map out the probable daily mileage in advance in order to reduce the area of desirable camping ground for each day to the smallest possible radius. The actual picking of the camp must, of course, be done on the spot. Nevertheless, it is convenient for the chauffeur to know when he is traveling over favorable ground for this purpose, and no special facilities are required to make this advance knowledge accurate and reliable.

Most of the big automobile clubs the world over publish good maps, and the topographic charts of the various states are of great aid in judging the lay of the country.

With this equipment, which can be absorbed in any large library, you can construct a set of handy maps for use when under way. Take a good, plain geographic map. Place over it a transparent tracing-paper, say of an "onion" finish, and thumb-tack the corners. Trace with black ink the rivers, railroads, towns, etc., of the country you wish to pass through. Trace with red ink the route you decide to take in passing through. Then take a topographic map and trace, in the same manner, mountains, hills, elevations and valleys; in short, the build of the land you are to enter. If your tour includes travel in but little known regions of this country, provide yourself with a tracing of a survey map such as the U. S. Geodetic Survey issues, which will give you what accurate information is available in advance. The data gleaned from these three maps should enable anyone to make up a driving chart, its object being to show at a glance the combined information contained in all the other maps. To be practical, such a chart must be simple—a sort of ready-reference resume of all needed road and camping information. Stake out your route in a heavy, red line. Everything that crosses this course is of more interest to you than what runs parallel with it; hence, note all railroad (- - - -), highway (——) and river (....) crossings, towns (C), farms (O) and wayside houses (X). Note only unusually high grades and low drops of the road, thus: Gr. 30 per cent. or Dr. 20 per cent. The topographic maps will give you every boulder, peak and bush in the country, but all you want to know is, "How long does this forest I am traveling through continue?"—or "How long must I camp in this treeless country before I strike woods and shelter?" Forests, and even the nature of forests, is easily indicated on the map by various symbols (¶, † or ‡), but instead of massing them to show the size of the forest, as is usual, simply draw the outline, say, for a pine forest with the symbol (†), for a hardwood copse with (‡), and for miscellaneous woods with (¶). A carefully planned map will give you a correct idea not only of the route, but of how far

you must travel to obtain the best available camping ground before night.

The size should not be larger than an ordinary handkerchief, and after pasting the map on chart canvas it should be rolled around a paper or wooden cylinder, placed in a waterproof box with a glass pane, so that the chauffeur may have it continually before him and turn the cylinder as he progresses over the route shown on it. This arrangement will obviate that most wearisome operation of a long-distance trip, of having to stop to consult maps—a very exciting performance when it rains or blows—or to consult "people you meet," who, as a rule, don't know any more about the country they live in than the average New Yorker knows about New York. There is not the slightest excuse why a chauffeur should not know, for his particular purpose, as much about the country lying in advance of him as a military commander for purposes of seeing an army through.

Next comes the choice of a proper vehicle, which for an extended trip of this order, had better not weigh much more than half a ton. If the party numbers eight persons, two 1,200 pound cars with one horsepower behind each one hundred pounds, and each carrying four passengers, would be far more preferable than a big high-power car of double capacity. Not only will the traveling be more commodious, but in case of breakdowns or accidents, the uninjured car can tow the other. The cars should be of the same model and make, so that the spare parts and accessories carried can be used to equal advantage for both.

For summer travel a tarpaulin roof on a frame, supported by four stanchions, and with side curtains, would give you entire protection from sun heat and rain showers. The same arrangement can be used for winter travel with an addition of a windshield in front. It is better to have the shield made in two sections, and folding vertically in the center, so that both panes are placed at angles with the wind pressure, in which position they are also better protected against the shocks of a jolting and jumping car front. Personally, I am in favor of no protection overhead or in front, for the most scorching sun that ever shone can be defeated in a Japanese palmetto hat, a suit of karki, and the wind pressure of the ordinary touring gait, while proper fur clothes, hood and face-masks will enable anyone not too enfeebled to face the blasts of a winter storm. The leather upholstering of the car will not suffer the least from an extended tour if well-fitting covers of enameled oilcloth are used. Less than two dollars' worth will protect every square inch of leather in a tonneau car. Dirt, mud and dust is readily removed by a few wipes with a cloth, or the covers, which are entirely waterproof, may be cleansed in a brook, and thus you are always sure of a clean and sanitary seat.

AUTOMOBILING IN HAWAII.

Besides the usual outfit of tools, spare parts, tires, etc., for making wayside repairs, an auxiliary kit is required to make camping possible and comfortable. If you intend to cover rough country, encase the bottom of the car in a detachable sheet-iron covering built in several sections. Have it fit snug and tight to prevent rattling and resist shocks. Nothing but iron will do, as you must be prepared for "roads" that are simply two deep ruts, with a stony ridge in the middle on which the car bottom will drag at intervals. You must also take into account long stretches of open country, bristling with tough vegetation like sage brush, which has been known to wear to a shaving the wooden handle of a spade strapped under the car body.

Take with you enough rope and chain to go around all four wheels. Sometimes you may need all four lengths of chain to pull the "other" car out of a dilemma. For this emergency carry detachable links to join the chain lengths into one, and use the rope as a pulling strap at either end of the chain. Thus a degree of resiliency is established sufficient to prevent both rope and chain from breaking. Carry also a small jack for lifting the car-body to admit of repairs, a spade, an axe, and in winter a wooden shovel or two. You will find them very useful when you least expect trouble. For summer camping bring along a military canvas tent. If you roll it in the army regulation style you will be surprised to see how small a bundle it makes. Have the poles made folding, the same as the legs of a surveyor's or photographer's tripod. To provide against dampness under foot a floor covering is best made out of the kind of flexible enameled oilcloth used for dashboards and carriages. It is absolutely waterproof, won't crack, and can be kept clean

and sanitary simply by wiping. For a hamper covering, this material is also preferable. Right here let me warn you against stuffing your clothes in hampers. You can't use them if you do, without a tailor to press them, and the tailor is never there when you want your clothes. Pack your clothes in a trunk and send them ahead by rail to some point of interest on your route where you can stop over and dress a bit. Don't take along with you in the car any other or any more clothing than you need for actual travel and camping. Plenty of underwear and stockings is alike indispensable during any season, but for summer a light karki suit, with a long leather coat for cool nights, and an oilskin suit for rainy weather, is really all you need unless you wish to add overalls for doing repairs. A pneumatic mattress and an army blanket is all the bed you would want, and the outfit rolls up snug. To my mind a hammock makes a handier and more comfortable bed for summer sleeping, and where trees are wanting it may be slung inside the tent on the poles, provided these are made strong enough. But even where there are no trees, sleeping in the open in a hammock can easily be accomplished. Here is an arrangement that will accommodate three sleepers; put three hooks on the side of the automobile, one in front, one in the middle, and one in the rear. Fasten the rear ropes of the hammocks to these hooks and lead the head ropes through the tent opening and secure them around the center pole. The heads of the sleepers will be quite close together and on a higher level—affording better sleep—than the feet, which will be at least a yard apart, and thus easy getting in and out of each hammock is provided. This shows what three hooks, properly used, are good for. For winter travel you, of course, dispense with your tent in favor of the sleeping-bag. If you can't get what you want at the stores, make your own bag. The outer covering should be waterproof. Rubber is too heavy and bulky, and unless you know of something better, I would again suggest a heavy grade of enameled oilcloth. This material will also prevent bugs and vermin from entering the bag, and, unlike rubber, does not "draw" the skin. The body of the bag can be made out of a high grade horse-blanket with an inside-lining of flannel, or simply a pure flannel blanket, than which nothing is warmer. It might not be amiss to let the neck of the bag continue into a hood for the head—simply oilcloth lined with flannel. This scheme enables you to remove your cap during your sleep, and thus obviate the headache this headgear often produces in a tenderfoot, while you have all the comfort of a close-fitting hood.

(*To be continued*)

## With Gladys as Chauffeur

*By Julia Boynton Green, in Sunset*

*Of ample shape, of vivid hue;*
*Lamps, brass, and wicker fresh and new;*
*With warning toot and deafening whir,*
*An auto dashes into view,*
*A splendid, shining thing, with her,*
*With Gladys, as chauffeur.*

*Her coat is very, very swell;*
*Her headgear's like a diving bell;*
*Those hats, I know, are de rigueur,*
*They're simply frights on all but her,*
*But anything on her looks well,*
*On Gladys as chauffeur.*

*She spies me and she checks her speed,*
*Her skill is marvelous indeed!*
*She bids me mount, could one demur*
*With so magnificent a steed?*
*And more, O! more than all, with her,*
*With Gladys, as chauffeur.*

*I smell a smell of gasoline*
*But to my nose 'tis attar keen.*
*I feel a wild, soul-shattering stir.*
*(A strange, delicious thrill, I mean!)*
*'Tis that we're starting, I infer,*
*With Gladys, as chauffeur.*

*'Tis scarce the place a maid to win,*
*One can't converse in such a din.*
*A gentle horse and buggy were*
*Fraught with less danger to one's skin*
*Than this contrivance, even with her,*
*With Gladys, as chauffeur.*

*I must protest, it's mad, this pace!*
*I see the mischief in her face.*
*I grasp her dainty gauntlet. "Sir!*
*Unhand me! pray you, keep your place!*
*Remember, when you ride with her*
*'Tis Gladys is chauffeur."*

*Faster we fly. I hold my breath,*
*These things explode, the paper saith.*
*The landscape passes in a blur,*
*She seems to press some secret spur.*
*Who'll save that child! that hapless cur!*
* * * * *

*Still it were sweet to go to death,*
*'Twere bliss to be blown up, if 'twere*
*With Gladys, as chauffeur.*

*Now she relents, we're slowing up;*
*She has some pity on the pup,*
*She spares the kid! Her passenger*
*Must drink her mischief's brimming cup.*
*She laughs, "Ah! you are not sans peur*
*Nor I sans merci! Come and sup*
*With Gladys, your chauffeur."*

# The Camera on the Car

## Wayside Inns

*From The Car, London*

The ancient hostelries to be found along the old stage-coach tracks possess great interest for the antiquary, and are worthy of being recorded by the motorist's camera. In these days the march of "improvement" is so swift, and the hand of the restorer so ruthless, that many of the old inns are being demolished to make room for up to date structures, or restored in such a fashion as to destroy their original features. Under these circumstances it is eminently desirable that some lasting records be secured of the older houses before it is too late. The work is particularly suitable for the motorist who travels far along the ancient highways, and he will doubtless come across many a rare example little known to the outer world. One can easily imagine how interesting would be the task of making records of the older wayside inns along the Great North Road, or along equally notable highways in this country. Many of the old hostelries possess historic interest, some have quaint old-world sign boards, whilst all have a more or less general interest for the user of the highway. The work may easily be accomplished with the hand camera, and in many cases the exposure can be made from the car itself. It may be interesting to append a few notes relative to the examples reproduced herewith:

(1) The Windmill of Tabley on the Chester Road is a favorite rendezvous for wheelmen. Its swinging sign was painted by Miss Leighton, and bears a representation of Don Quixote tilting at the windmill on one side, and the other bears the De Tabley arms.

(2) The Seven Stars, Withy Grove, Manchester, said to be the oldest licensed house in Great Britain, was once in the heart of the country, but the great city of Manchester has hemmed it in, until now it stands in one of the busiest thoroughfares.

(3) The Smoker, on the Chester Road near Northwich, so named after a famous horse of that name which has been painted on the swinging sign.

(4) The White House, an old coaching house situated on the summit of Blackstone Edge, that portion of the backbone of England which divides Yorkshire and Lancashire. This old hostelry has been vividly described by Edwin Waugh in his Snowed Up.

(5) Tyn-y-groes, the famous hostelry near Dolgelly in North Wales, a well known coaching house and a popular resort for motorists who visit that part of Wales. It it situated amid the most delightful scenery in the principality.

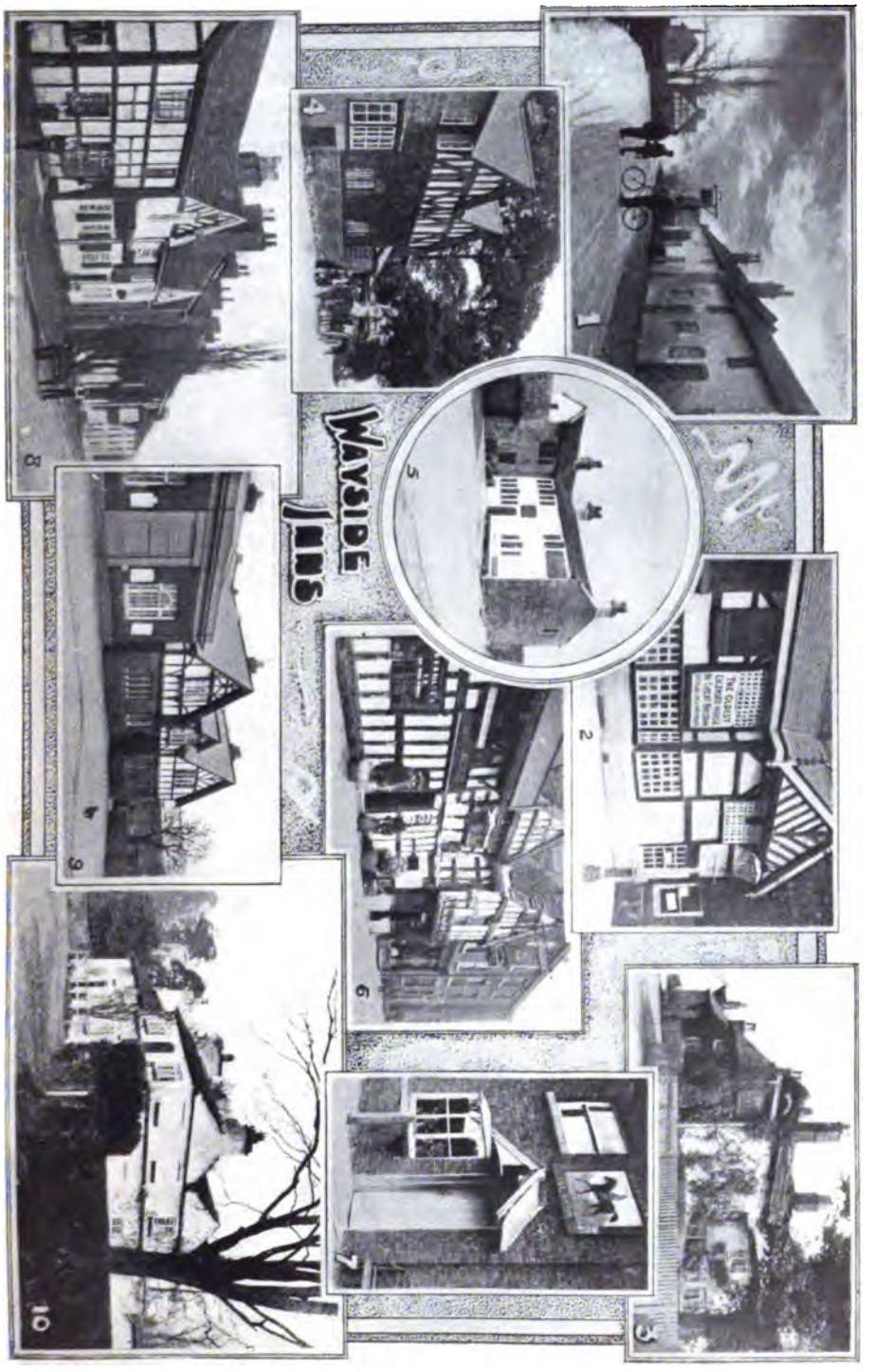
(6) The Rose and Crown, Knutsford, a half-timbered building of considerable antiquity well known to northern motorists and cyclists. It stands in the heart of "Cranford," which Mrs. Gaskell has so faithfully delineated in her beautiful idyll.

(7) The Kilton, Hoo Green, Cheshire, so named after the race horse painted on the sign-board. Dick Turpin visited this house on more than one occasion.

(8) The Black Boy is situated in the pretty litle village of Prestbury, in the southeastern corner of Cheshire. It belongs to the Tudor period, and is reminiscent of the old stage-coach days. Tradition says that it formerly bore the sign of the Saracen's Head, but a painter, not knowing what kind of a man a Saracen was, painted a negro as the best representative he could devise, and ever afterwards it became known as the Black Boy. The original sign may still be seen in the yard behind the inn. This old hostelry is a famous resort for wheelmen from the Manchester district.

(9) The Ring o' Bells, Daresbury, near Warrington, stands near the church, and its sign bears a painting of the bellringers in the belfry. It was near this old inn that "Lewis Carroll" was born.

(10) The Wizard stands on the summit of Alderly Edge, surrounded by the stately pines that crown the Edge. Its name is derived from the romantic legend of the Wizard of the Edge, who, with his army of gallant knights and white steeds, are imprisoned within the iron gates, waiting the fateful hour when they shall issue forth to battle on the plain below. The sign bears a representative of the Wizard in a flowing robe, and a Lear-like expression on his face. The inn is a good spot from which to explore the beauties of the Edge and to search for the "Iron gates."




WAYSIDE INNS IN ENGLAND. For description see page 22.

MACHNOW EN ROUTE TO CRAWLEY.

## The Giant in the Car

Machnow, the Russian giant, who is now appearing at the Hippodrome, took a drive to Crawley last week on a 9 h. p. Oldsmobile. There was an enormous crowd assembled to witness the start from London, and the great man, who measures 9 ft. 3 in., aroused great interest. The appearance of the giant in such a little car as the Oldsmobile was very strange and attracted attention everywhere. The return journey was made in the afternoon, and the giant expressed himself delighted with motoring and with the smooth way in which the Oldsmobile ran. This car although only a 9 h. p. car, carried him splendidly and made excellent time, despite the fact that he weighs over 33 stone. He was accompanied by his wife, and in order to make sure that there was no possibility of him catching cold he was carefully wrapped up in some half a dozen blankets.—The Car, London.

IN ANCIENT ATHENS.

## A Transcontinental Contest

Each season for several years past has brought forth its event to arouse automobile enthusiasm. The event of the present season promises to be the transcontinental run to be made by two Oldsmobile Standard Runabouts, to start from New York City May 8th to the Lewis & Clark Centennial at Portland, Oregon.

The cars will be driven by Dwight B Huss, of Detroit, and Percy Megargel, of Buffalo. The former will be accompanied by Milton Wigle, of Detroit, and the latter by B. Stanchfield, of Lansing, Mich. The race across the continent will be an exciting one, a prize of $1,000 being offered to the driver who brings his machine safe into Portland first, the second driver to be awarded the machine he drives. While an automobile trip across the continent is no longer considered an impossible feat, the number of such trips is very limited, and the journey is fraught with enough novelty, danger and hardship to insure its being followed with unabated attention by all interested in automobiling.

The run is timed to reach Portland for the opening of the National Good Roads convention.

# The How and Why of the Automobile

## A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from April issue*)*

IT has been found by increasing pressure of the gas in the cylinder before ignition that the efficiency of the motor was very much increased, and for that reason cylinders are now so designed that they will allow the gas to be compressed to somewhere between 60 and 120 pounds before the charge is fired. Fig. 8 shows a curve giving the relation between this compression pressure and the "clearance volume" (space left in cylinder when piston is at its extreme upward position).

You will note that pounds per square inch of pressure are laid off, or measured, along the vertical line, and the ratio of the clearance volume to the total volume along the horizontal line. Let us take an actual case and see how the curve may be used. Suppose for instance that we desire, in designing a cylinder, to obtain a compression pressure of 85 lbs. You will

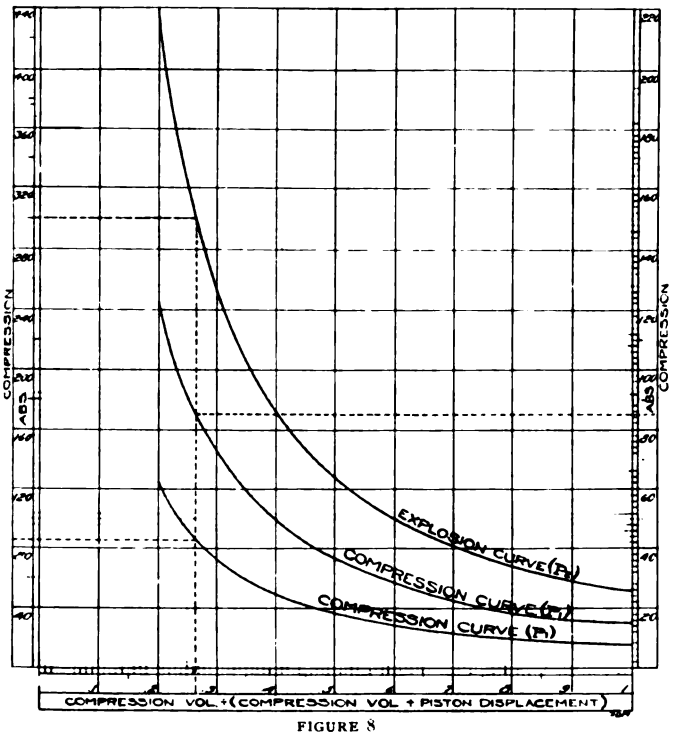



FIGURE 8

* This valuable series began in the March issue, back copies will be sent upon receipt of regular price.

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note that a horizontal line drawn through 85 intersects the curve at a point P, and a perpendicular dropped from this point intersects the compression line at about 26. Now if the ratio of the compression space divided by the (compression space plus the piston displacement) equals 26, then the piston displacement being known for a given motor, the compression space may be easily found and designed accordingly. In using the accompanying chart the middle curve is the one used for estimating the compression. The units of pressure are to be expressed in absolute pressures. That is, as the atmospheric pressure is about 15 pounds, any pressure shown by a gauge would be above that, hence in order to reduce gauge pressure to absolute pressure you should add 15 pounds to the reading of the gauge.

In order to verify results after the motor is assembled and placed on a testing stand, the actual compression space is accurately measured. The valves are carefully "ground in" so that they are air tight, the piston placed on head end "dead center," that is, at its highest position and the remaining volume of the combustion space is filled with oil. The oil is then drawn out and carefully weighed. Knowing the weight of a cubic inch of oil, the compression space may be easily found by dividing the total weight of oil by the weight of one cubic inch.

## VALVES AND VALVE MECHANISM

Having explained the construction and use of the cylinder, let us now take up the question of valves and valve mechanism.

You can see that in order to introduce and release charges of gas in a cylinder, it is necessary to provide some means of opening and closing holes or "ports" in the cylinder walls. This is done by means of valves. A valve is nothing more or less than a plate that covers and uncovers a passage leading into the cylinder. However, a simple plate will not make a joint tight enough to hold the pressure within the cylinder, consequently a slightly different form has to be used. Fig. 9 shows a typical form of valve. The size and lift of valve is determined by the size of the cylinder, and the speed at which the motor is to be run. For example, assuming that you have a certain volume to be filled each stroke, the valve must have sufficient size and opening to allow this amount of gas to enter without retarding its passage to any great extent. Therefore, knowing the velocity at which the gas travels, and the number of times the cylinder must be filled per minute, it is a comparatively easy matter to design the valve accordingly. Naturally, the velocity of the incoming and outgoing gases is different, and, therefore, both valves are not usually given the same lift. The diameters, however, are usually made the same so that the valves are interchangeable.

Inlet valves are of two kinds—automatic and mechanical.

**The Automatic or Suction Inlet**—By an automatic valve we mean one which is operated by means of the suction created in the cylinder by the downward movement of the piston. This form of valve is held on its seat by means of a light spring whose tension is so adjusted that a slight decrease in pressure inside of the cylinder will cause it to open inwardly, thus allowing the gas to rush in and make up for the deficiency.

**The Mechanical Valve**—The mechanical valve is provided with a very stiff spring which keeps it on its seat until forced to open by means of a

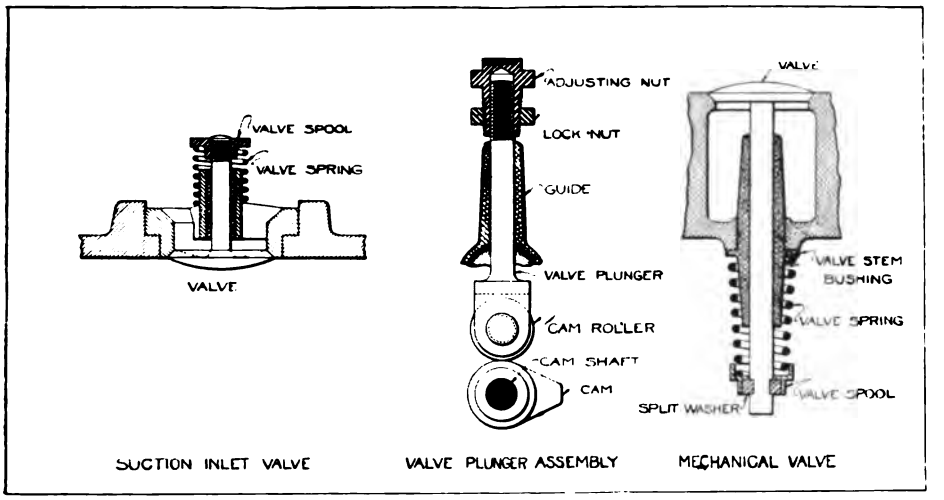


FIGURE 9

cam actuated by the engine itself. Thus, you see, that one is automatic while the other is positive in its action; the former opens only when the condition of the cylinder allows its operation, while the latter opens and closes always at stated intervals in the cycle. Naturally, each has its advantages and disadvantages, and each its reasons for existence.

### Advantages of Automatic Inlet

1. The valve stays open until the cylinder has received enough gas so that the pressure inside is equal to the atmospheric pressure or nearly so.
2. It requires no mechanism to operate it.
3. It is cheaply constructed, and easily removable.

### Disadvantages of Automatic Inlet

1. This type of valve is rather noisy.
2. It is very likely to stick on its seat.
3. Tension of the spring may not be properly adjusted, and consequently the cylinder will not receive its proper charge.

### Advantages of the Mechanical Inlet

1. It is positive in its action. Always opening and closing at the proper time, providing the valve timing is correct.
2. It cannot stck on its seat if valve mechanism is working perfectly.

### Disadvantages of the Mechanical Inlet

1. Owing to the fact that it is very hard to calculate the exact time the valve should open and close, the above conditions are not always realized.
2. It must be operated by some form of valve mechanism, and this, of course, introduces extra bearing surfaces, levers, and rods which increase the friction loss, and require more or less attention.

3. The timing of the valves may be changed owing to the fact that cams and rods wear, and thus motor may lose power from this source.

**Exhaust Valves**—Exhaust valves must of necessity be mechanically operated for the reason that they are always opened against a comparatively high pressure.

**Valve Mechanism**—Figure 10 shows a typical form of valve mechanism, a brief study of which will make clear the various functions of the component parts. As you will remember, in the four-stroke cycle motor, the charge is taken in every other revolution, so that the valves open only every fourth stroke. Thus, the cam shaft, which operates them, should run only one-half as fast as the main shaft of the engine. In order to bring this about, the cam shaft, or "half time" shaft, as it is sometimes called, is geared

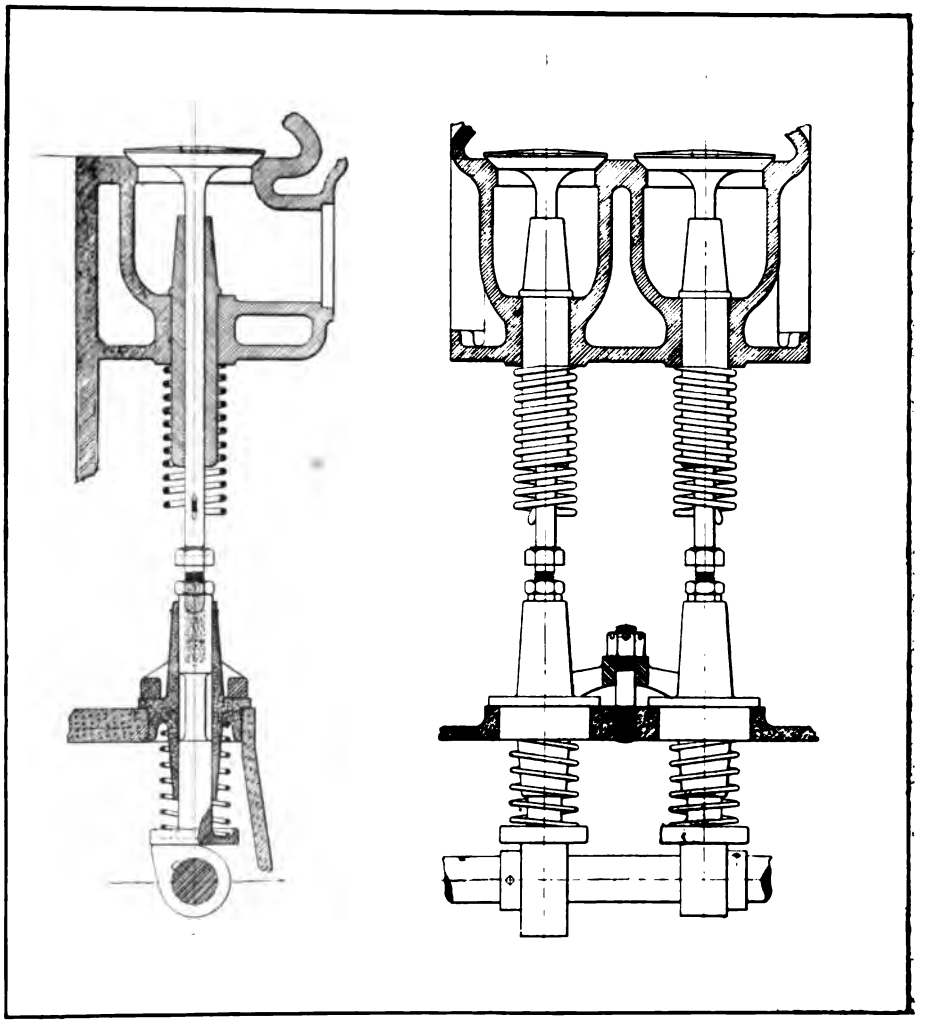

FIGURE 10

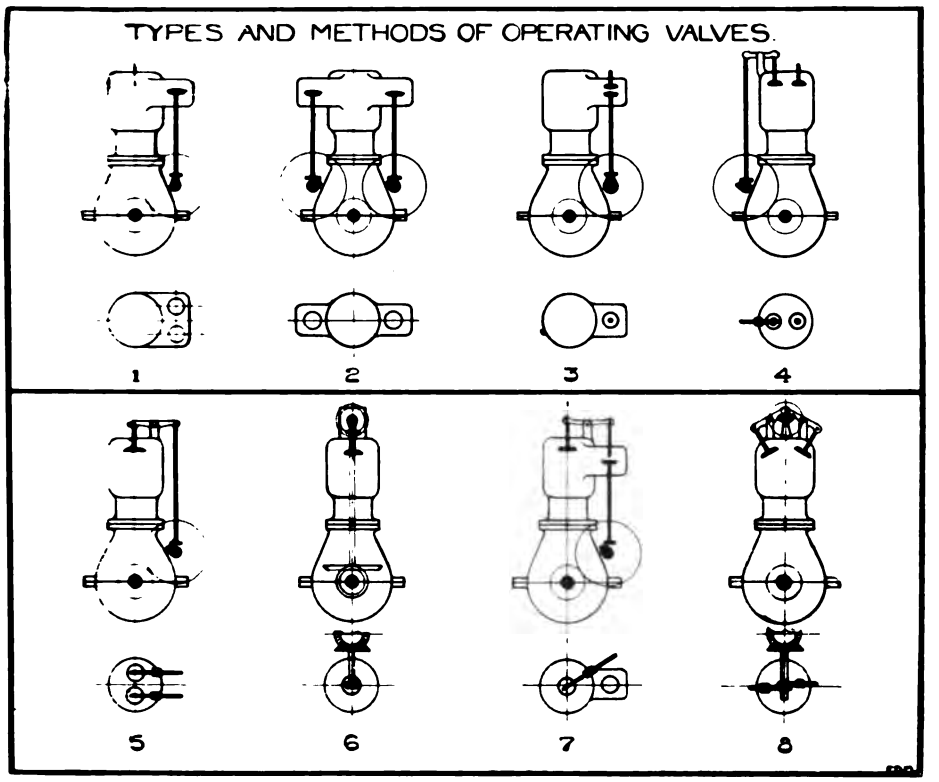


FIGURE 11

down by means of either worm or spur gears, to run at one-half the speed of the motor.

**Method of Placing Valves**—Figure 11 shows various methods of placing and operating valves. In No. 1 both valves are mechanically operated and run from the same cam shaft. No. 2 is the same except that the valves are placed on opposite sides of the cylinder, and two cam shafts are used. No. 3 shows an automatic inlet, and a mechanical exhaust. No. 4 illustrates a form where both valves are placed in the head, the inlet being of the automatic type, and the exhaust mechanically operated. No. 5 is the same, except that both are mechanical. In No. 6 both are mechanical valves, actuated by a cam shaft running across the top of the cylinder, and this in turn being operated by means of bevel gears from the main shaft. No. 7 is similar to No. 4, with the exception that only one valve is placed in the head of the cylinder. No. 8 shows a slight modification of No. 6. This, of course, only applies to vertical cylinders, but the arrangements of horizontal engine valves may be noted in some of the following illustrations.

(*To be continued*)

# MOTOR TALK

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## Among the Clubs

The Berkshire Auto Club was organized May 15, 1902, and now has a membership of 82 members. The club has recently fitted up rooms in connection with the Central Auto Station, where a ladies' reception room, toilets, etc., have been provided, and is considered the finest quarters in Western Massachusetts. The club room opens into the Central Auto Station Garage, which occupies about 7,000 feet of floor space, and has an electric charging plant, and in fact everything up-to-date.

President Guldlin, of the Fort Wayne (Ind.) Automobile Club, has donated a site for a club house. The club has elected the following officers: President, O. M. Guldlin; vice-president, T. F. Thieme; secretary, A. L. Randall; treasurer, A. C. Alter; racing committee, A. C. Alter, W. F. Griffin, A. L. Randall, Dr. D. W. Dodez; road committee, L. Ohnhaus, E. E. Merritt, Wright Dodez and James Baxter.

The Davenport (Iowa) Automobile Club has elected as officers: President, W. D. Peterson; vice-president, T. B. Carson; secretary, A. H. Reubsam: treasurer, Benjamin L. Schmidt; directors, Samuel T. White, George A. Gould and Orey Jansen.

The following officers have been elected for the Louisville (Ky.) Automobile Club: President, George H. Wilson; first vice-president, Harrison Robertson: second vice-president, Colonel Briscoe Hindman, secretary, Dr. Adolf Pfingst, and treasurer, J. B. Lewman.

The officers elected by the Automobile Club of Maryland are: President, W. S. Belding; vice-president, Richard R. Leopold; treasurer, William Knabe; secretary, C. W. Stork; governors, Richard I. Leopold, M. Gillett Gill and W. S. Belding.

At the annual meeting of the Kankakee Automobile Club the following officers were elected for the ensuing year: C. E. Holmes, president; August Radeke, vice-president; Charles H. Cobb, secretary, and W. S. Vandewater, treasurer.

Secretary H. N. Dickerman announces a race meet to be held at Beloit, Wis., on July 4, under the auspices of the Rockford Automobile Club, to which affiliated clubs are invited. The Rockford club has nearly one hundred members.

The A. C. of Burlington has tendered its automobiles to the officers and past officers of the Grand Lodge, I. O. O. F., for use in their parade, which will be held there on May 23. The club is doing everything in its power to familiarize the public with the automobile, and this is but another instance of its efforts in this direction. Numerous short runs are now being planned for the summer months, but dates and routes have not yet been selected.

## Books Received

**Under this heading will be noted from month to month any books or catalogues sent us which are worth of special attention.**

In these days when so many are eagerly seeking practical knowledge of the theory, construction, operation, care and management of the automobile, the second edition of James E. Homans' "Self-propelled Vehicles" (New York; Theo. Audel & Co. 644 pp. Price $2.00) finds much favor. Illustrated with over 500 photographs and diagrams, the text is skillfully arranged and is exceedingly well adapted to meet the requirements of the seeker after reliable information. In his preface Mr. Homans gives the following as his idea of what an automobile should be:

"The automobile, considered as a practical machine, occupies a peculiar place, from both mechanical and popular points of view. It must be carefully designed and thoroughly equipped to serve its purposes under all the trying conditions of its use. It must, furthermore, be of simple and strong construction, so as to render disablements in service and consequent repairs—often at points distant from mechanics skilled in the last special field—as few and as unimportant as possible. Last, but most conspicuous, it must be readily controlled and operated in the large majority of instances by persons who do not consider that the pleasures derived from 'motoring' warrant them in becoming well-informed in engineering matters."

There is probably no other book on the market today so well adapted to the needs of the beginner, or to such persons who have neither time nor inclination to delve deeper into the subtleties of mechanics than the construction and management of their own machine requires.

# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

OLD SCOUT

JUNE 1905

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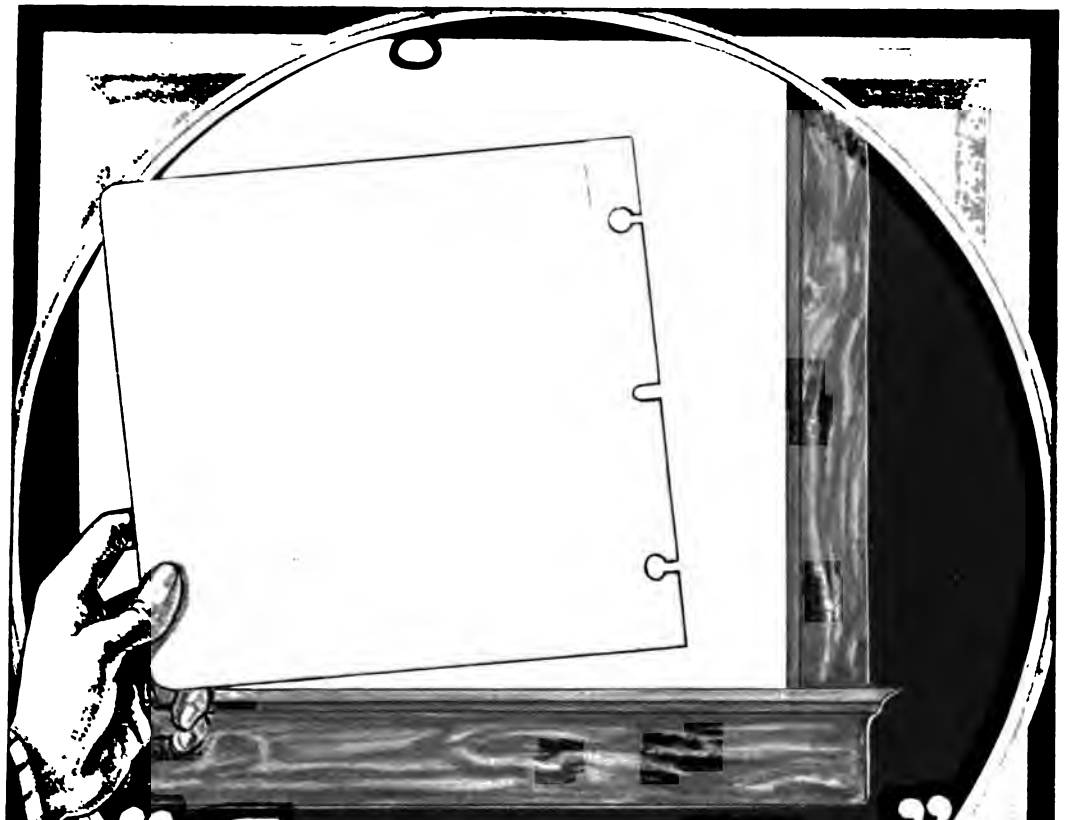

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SENOR RUSINOL AT THE SUMMIT OF THE ANDES. IN FRONT OF CHRIST STATUE ERECTED TO COMMEMORATE PEACE BETWEEN THE ARGENTINE REPUBLIC AND CHILI.

# MOTOR TALK

**A MAGAZINE OF OUTDOOR SPORT**

VOL. I. JUNE, 1905 NO. 6


## Across the Andes in an Automobile

### An Interesting Account of the Thrilling and Hazardous Trip as Told by Senor Rusinol

*Illustrated from Photographs*

AUTOMOBILING in South America is still a novelty, which perhaps lends peculiar interest to the fact that one of the most strenuous feats ever performed by an automobile should have been accomplished in the Argentine Republic.

The event referred to is the success attained by Senor Pedro Rusinol this spring, when he drove a 10 h. p. Oldsmobile Light Tonneau car from Buenos Ayres across the Andes to Chili. This exploit, which was given considerable publicity in the French papers was credited by them to a de Detrich car, which, however, is contrary to fact, as is clearly shown by the illustrations published herewith, which are reproduced from pocket camera photographs taken on the trip.

In speaking of the event, Senor Rusinol points out the fact that these photographs give positive proof that the car went over the Andes at the point claimed, as one of the prints shows the car directly in front of the Christ statue, which is at the very summit of the mountain and nowhere else. This statue was placed there a number of years ago to commemorate peace between the Argentine Republic and Chili.

In writing of the event, Senor Rusinol says: "The trip was made in six hours of continual travel, over roads which were extremely bad, not only because full of stones and rocks, but on account of the quantity of ice and snow which was encountered. In addition to these difficulties I had to struggle against the mud which was to be found in some places, occasioned by melting snow, and with the mountain torrents which sometimes reached the axles of the Tonneau.

"As this was the first trip ever attempted over the Cordilleras de los Andes, there was much doubt as to its success, the majority of the automobilists regarding it as impossible, because besides the bad condition of the road which I have already mentioned, I must add that the grades to be ascended in order to reach La Cumbre de la Cordillera, vary from 12 per cent to 28 per cent, the roads being in zig-zag form, with sharp angles, and very narrow curves in which the machine scarcely had room to maneuver, there being great precipices on the sides, which constituted a grave peril. From the photographs I send you you can form some idea of the condition of the road and the quantity of snow there was (some two or three metres), in some places the automobile having to break through it to open a way for itself, ascending grades of 20 per cent until arriving at the summit of the Andes (La Cumbre), 4,000 metres above the level of the sea. If the machine conducted itself well in the ascent to La Cumbre, showing great strength and power of resistance, having been delayed but once, when it was completely buried in the snow, emerging from that position by its own efforts, in the descent from La Cumbre de los Andes it gave proofs of having ex-

ON THE ANDES—AT ONE TIME ALMOST BURIED IN SNOW.

tremely powerful brakes, because the descent was much more difficult than the ascent, due to steeper grades and sharper curves, to which could not be applied the name of carriage road.

"Besides the natural difficulties which I had to overcome in making the perilous ascension and still more dangerous descent, it must be added that I had to struggle against a storm of wind and snow which would have made it impossible for a carriage with horses to have proceeded. I owe the success of my enterprise entirely to the excellent qualities of my Oldsmobile, as I can assure you that in any other automobile the trip could not have been carried through.

From both the Chilian and Argentine sides of the Cordilleras, various other attempts have been made to cross over, and all have been unsuccessful on reaching the first grade of 16 per cent. Subsequent to my successful trip in the Oldsmobile, an attempt was made with other machines from the Argentine side, but they only succeeded in going about five kilometers from the starting point, La Cuevas, the excursionists being obliged to return, having been unable to control their machines, which backed and went ahead at will. My Oldsmobile, after its arduous trip, did not suffer any hurt whatever, arriving in Santiago de Chile without difficulty, and in perfect condition.

"I have read with the greatest surprise in a number of 'L'Auto,' from Paris, an article sent by cable from Buenos Ayres, by Mr. Victor Laborde—whom I have not the pleasure of knowing—not even by sight. In this article Mr. Laborde says that he has made in my company, the famous automobile trip across the Andes in a 24 horse-power de Dietrich, and the same article publishes views of the Cordilleras, in which, however, no automobile appears. This article is completely false, as I did not make the trip with this gentleman, whose face I have never seen, nor did I make it in a 24 horse-power de Dietrich, but in an excellent Oldsmobile Tonneau of only 10 horse-power."

ON THE ANDES—THE DESCENT MORE DANGEROUS THAN THE ASCENT.

# A Ride in an Automobile

*Selected from Leslies Weekly*

*Oh, others may talk of the joys of the dance*
*When the music is dreamy and low,*
*Or the thrill of delight when the sail is unfurled*
*And the wake is a smother of snow;*
*Or the pleasure a canter on horseback affords,*
*Or a day with the rod and the reel;*
*But give me the reach of a long level road,*
*And a seat in an automobile!*

*How the miles rush away from the tireless machine!*
*How houses and fences fly past!*
*The town is a blur, and the orchards and woods*
*In ribbons of green follow fast.*
*It's adieu to the carriage we meet as we go,*
*And farewell to the swift-moving wheel,*
*And good-bye to the trolley we soon overtake*
*When out in an automobile.*

*If perchance it is spring-time, we lunch as we rest*
*On a bed of blue violets sweet,*
*With a thrush or a robin to trill overhead*
*A silvery song while we eat.*
*We linger a while under blossomy boughs,*
*An armful of fragrance to steal*
*From apple-trees freighted with dewy pink buds,*
*Then away in the automobile.*

*Should somebody dear on the seat nestle near,*
*Then slackens the speed of the car,*
*Gliding slowly along in the amethyst dusk*
*By the light of the bright evening star.*
*There's a question to ask, and an answer to hear*
*And a promise with kisses to seal,*
*And later the bliss of a honeymoon tour*
*For the pair in the automobile.*

# Camping Out With An Automobile

## A Practical Article by Hrolf Wisby, Containing Many Valuable Suggestions

*From Outing*

*(Concluded from May)*

A cheap and quite efficient method of improvising a sleeping-bag on the spot is to fasten together with safety pins two pieces of enameled oilcloth, roll up in your blanket and slide in. I should think that stunt would make 10 degrees below seem a small drop to any man sleeping in the open. When I stopped at Dyrisfjordur in Iceland, in 1888, I saw Fridthjof Nansen, who was then preparing to cross Greenland with a kit so simple and small that even I, who was at that time a naval cadet, questioned its efficiency. He had no fur clothes at all, but wore a thick gray woolen suit of a special weave, the jacket being double-breasted and buttoning on the side, not in front. His sleeping-bag was of the same material with a light canvas cover, which did not protect nearly as well as the oilcloth cover suggested above. "*Mine ski er mit baal,*" he explained, meaning that he would use his skis so well he should need no other warmth. The automobile camper cannot depend upon exercise to keep him comfortable—hence his kit must be the heavier.

To get the proper benefit of a sleeping-bag, leave your fur garments in the car, remove your boots, and keep on only your underclothing and ordinary traveling suit, both of which should be made of wool. When you have bagged yourself in this manner, effect a change of stockings, and you will not be likely to suffer from cold feet. If a strong wind is blowing, go to work with the wooden shovel and pile up a foot of snow right in the face of the wind. Lie down in your bag under the lee of this snow wall and you will be entirely comfortable. In fact it is warm to sleep out in the snow in this fashion, whereas canvas overhead makes you chilly, and besides it is liable to blow away or burst under the weight of snow. When you wake up in the morning, just remove the hood and rub your face and hands vigorously with the snow. This will give you splendid circulation. Leave soap alone and don't wash. In extreme cold, soap will only crack your face. To "equip" your face for the rigors of fast traveling in a freezing atmosphere, rub both face and hands with vaseline, and keep on rubbing until every pore is fed and closed. You may then wipe with a rough towel, and whatever dirt is on your face will come off in the towel, enough vaseline remaining in the pores for protection. You are now fit to jump out of the bag. Before dressing, however, wrap yourself in a blanket and skip around in the snow with bare feet for five or ten minutes. If you keep your feet going you won't feel the cold in the least, and it will give you a start of warmth and comfort that will last all day. Now slip into your fur garments and boots, and light the camp fire. With the first sip of fragrant coffee you will be quite comfortable, and at peace with all the world, even if the thermometer says thirty below.

The common kind of fur coat is not so good but what it can be improved. The open front is a mistake. It is of little use except to get at the inside pockets, and inside pockets are a mistake. A fur coat opening on the right side with clasps unbuttons readily with the right hand. Big pockets sewn on the outside will make unfastening unnecessary, except for donning and doffing the garment. Go a step further and appropriate the century-old experience of the Eskimo in building fur clothes. Dispense entirely with buttons and clasps. Shape the coat like a turtle-neck sweater. Make it loose-fitting all over, and especially over the waist. Cut it off at the hips. Make the trousers out of the same fur, with the hip-lining somewhat lower than the ordinary, so that the coat will just overlap it. This design will afford extreme mobility of body, also in the waist, where the space provided by the loose overlap of the coat will supply ventilation—a most important thing, without which any garment is unsanitary, and soon ceases to yield and retain warmth. Under each armpit insert a single row of, say, four circular eyelets, and sew over them, on the inside, a strip of cheese cloth. This will prevent chills around arms and

A FAVORITE SPOT WITH AUTOMOBILISTS IN THE BRITISH ISLES.

shoulders from stagnant sweat, and it will add to the wearer's comfort. Snap-buttons could, of course, be provided on the right shoulder and on the side of the neck, to make the jacket slide on easier, but it isn't necessary if only the neck is wide enough to put the head through. First insert the arms in the sleeves and then draw the jacket over your head as you would a sweater.

The proper way to pack is one of those little side issues that most tourists do not stop to consider, and which, for this reason, causes needless worry and work. The baggage is usually stowed with no discrimination between the things needed constantly and the things wanted only occasionally. This means unpacking a lot of things you don't want, to get at what you do want, every time anything is wanted. Bags, satchels, suit-cases, etc., are useless, and take up to much room. Bundles alone are satisfactory, but labeling them won't do because you have to hunt for the label, which is liable to get torn or lost. Provide yourself with a dozen different colored pieces of oilcloth. Use white pieces for packing underclothing, black pieces for clothing, red for footwear and outercloth-ing. Pack your charts in yellow, your ammunition in blue, and your kitchen utensils in green, oilcloth. Divide up the other colors to distinguish the rest of your kit, and pack what you need constantly in the hampers, which had better be lined inside and outside with heavy enameled oilcloth. It is much easier to remember the contents of a bundle by color than by number or location.

Opportunities for appropriating and improving the ideas carried out by experienced voyageurs will suggest themselves to the ingenious camper.

Here is a good idea originated by an Englishman and improved upon by an American. The latter is a New York business man and known to me personally. In tramping the Alps he ran across an apparition resembling a peddler, which on close view proved to be mainly an alpenstock with strings tied to one end of it, and at the other end an English scholar of Socratian simplicity. On each string dangled a small bundle done up in paper, the total number of bundles representing his entire pack. He could readily unpack any one of these bundles, and put his hand on what he might want, without disarranging the rest of his baggage. That was his scheme. A few weeks later my American friend was fishing salmon in the Loch Lomond with a Scotchman, who considered himself weather-and-worry-proof in a triple-ply raincoat. A shower came up. The American, who was dressed in an ordinary outing suit, produced a yard and a half of enameled flexible oilcloth, and cut an aperture in the middle of it with his pocket knife. Putting his head through this aperture he had in effect the protection of a Mexican poncho. A goose-back could not shed the rain better than this oilcloth cape, which was comfortable because it hung loosely and provided ventilation. Another piece of oilcloth, the size of a handkerchief, pinned to his cap, transformed it into a waterproof headgear. He didn't look pretty, but he felt pretty good. After the shower, which left the American dry and cool, and the Scotchman wet, hot and swearing, the former suggested luncheon. The Scotchman's fare was almost as water-soaked as himself.

"Have a bite with me?" suggested the American, unclasping his belt, from which various strings depended holding small parcels wrapped in oilcloth and all marked 8:10 a. m., the hour of starting. The Scotchman, who supposed the parcels to contain only fishing requisites, was hugely elated to find in some of them a choice assortment of sandwiches as fresh and palatable as could be desired.

"Suppose we sit down," remarked the American, removing his improvised mantle, which, spread upon the wet grass, afforded a dry seat to sit on and a clean cloth to feast upon. At the price of less than thirty cents my American friend had succeeded in providing himself ingeniously with rain-coat, rain-hat, a dry seat, a clean table-cloth, and rain-proof kit, each separate part of which could be got at without disarranging the other parts—the alpenstock scheme was out-done.

If you go out automobile camping, you will have to go out afoot shooting and fishing a bit, when it will pay you to adopt the oilcloth idea, which you will find entirely practical.

AN AUTOMOBILE MEAT MARKET.

The care practised in packing your camp-kit properly is, to some degree, a waste of effort, unless at the same time, you provide for a proper distribution of the separate parcels.

For a party of three traveling in a tonneau with seating capacity for five—and this is an ideal proportion of room to occupants for just such a trip—I would suggest a handy disposal of the outfit mainly in hampers. Besides the usual arrangement over the rear wheels, an auxiliary hamper could be strapped on the outside of the tonneau door, which should contain nothing but the "emergency" wardrobe, such as oil-skin clothing, rubber boots, etc. When a shower or a dust-storm springs up, the third man traveling in the tonneau simply reaches over, empties the auxiliary hamper and deals out the clothing. You avoid the irksome stop or slow-down at the very time when you may want to use all possible dispatch to gain shelter. Directly under the forward end of each side hamper is a space, in most machines of standard make, extending to the dip of the rear wheel dash, which could very well be utilized for an auxiliary hamper. An oblong pattern, measuring twelve inches wide and thirty inches long, would fit most cars of 1,200 pounds size. It should be fastened at top and bottom in a readily detachable manner, so as to permit of access to the machinery, part of which it will necesarily hide from view when in place.

Leaving one seat in the tonneau for the occupant, the other seats could be either removed and replaced with specially made hampers, or a large hamper fitting into the vacant space, and extending the height of a man's shoulder when sitting, could be placed upon two seats, leaving a double seat for the occupant and the camp dog or "mascot." This hamper should be divided vertically in three compartments to make the contents "get-able." You probably will not be able to get just the shape of hampers you want at the stores, but any maker of wicker-ware and reed furniture—there are plenty of them in the business directory—will build you any desired pattern for a slight extra charge, if you furnish dimensions and measurements. Thus equipped, your machine will carry two regular side hampers horizontally, two auxiliaries placed vertically under them, a fifth—the "emergency" hamper—on the door, and a sixth filling half the inside tonneau space. There is enough variation in the shape of these patterns to permit of your packing your whole outfit in wickerwork and oilcloth—a decided advantage. Tent-poles, spade and shovels being detachable, you can strap them to the car body in line with the chassis rail after inserting them in cases of heavy oilcloth. The guns and fishing rods, similarly encased, go under a double strap on top of the rear-wheel hampers. There should be room on the tonneau floor for the pneumatic mattress when deflated and folded four times. The tent canvas rolls up snug in a corner, unless you travel "omnibus" style, when you may stow it on the roof. Consign your portable kitchen to the vertical hamper on the left, and your kitchen utensils, etc., to that on the right. Dispose the balance of your kit among the other hampers as already indicated.

A DOG AMBULANCE.

For a trip of this kind a searchlight is almost indispensable, not only for examining the road-bed, but for the timely locating of such obstructions and dangers as cannot be detected without it. You may drive along a well-kept country road for miles without a mishap, and, when you least expect it, suffer the experience of a friend of mine, whose face was horribly lashed by brushing full speed against a row of low-hanging willows. He was watching the road intently when it happened, and his lamps threw no light on the danger overhead. In some parts the farmers have the cute habit of putting up a rail or a board fence across the road as a warning in case of broken bridge ahead or similar accidents, and while the "warning" works well enough in the daytime, it becomes a menace to night travel, as such a fence is usually not detected until you are climbing it. A searchlight will enable you to spot the fence in advance, and as you return upon your tracks, you can manipulate the flash left and right to pick out a cross-road or devious route. When two machines are doing the trip together, and cross-roads puzzle you as to the right course to follow, let one machine remain at the crossing while the other goes ahead scouting. The scout can signal "All right -come on" by three flashes of his searchlight, either by revolving it thrice in a circle, by turning it off and on, or by fanning a cap before it

If you combine the instinct of the sportsman with the touring spirit of the automobilist, it is not at all unlikely that successful camping and hunting and fishing may take you out into the open where roads are not and the chart is a vacant space. Suppose you lose your way in the wilderness, that you have a serious breakdown, that your provisions give out, and starvation faces you. Suppose—for this has occurred more than once—that all this trouble happens under the shadow of a telegraph pole, humming with the busy talk of faraway cities. What wouldn't you give for a chance at that wire for a minute or two? Don't you think it would be just as well to carry along a small Morse instrument, and learn just enough of the code to tell the nearest operator that you are in trouble? Be a little circumspect, however, and don't do it too often, that you may not be mistaken for a "wire-tapper." Also, don't in your hurry and worry forget to pay the tolls for your "steal" at the nearest telegraph office. While you are about it, you may as well supplement your ticker with a modern portable telephone—a miniature pattern of internal 'phone will do—for in many districts the upper wire in the farmers' fences is part of a rural telephone exchange, through which you can call up pretty nearly a whole community—from a team of horses to pull you out of a hole, to the sheriff and his posse and the doctor and his bandages, for automobiling, like all true sport, has a delightful degree of uncertainty.

## A 1000-Mile Record Run

In commenting on the 1,000-mile record made by C. D. Wrigdway at the Brighton Beach track, Brooklyn, May 5th and 6th, Alex Schwalbach in Leslie's Weekly says:

"Wridgway's performance needs more than a passing reference. In fact, it needs analysis. Driving a 24-horsepower Peerless touring car, Wridgway accomplished a remarkable feat in automobiling. Sitting continually at the steering wheel of a big machine for more than a whole day, he established new track records from 100 miles to 1,000 miles inclusive; smashed the mileage for 24 hours, never once let his engine run down, and incidentally set a pace for human endurance. Driving day and night and day again around a mile course that required practically ceaseless turning, Wridgway placed the 24-hour record at 943 miles, a gain of 123 miles on the mark established by Charles Schmidt in a Packard touring car at Detroit last year. His time for 1,000 miles was 25 hours, 50 minutes, 1 second, beating Schmidt's figures by 4 hours, 3 minutes, 36 seconds. He averaged throughout nearly 39½ miles an hour, as against an average of about 34½ miles an hour by Schmidt.

WRIDGWAY AT THE END OF HIS RECORD RUN.

# Co-Operative Automobiling

## Some Suggestions in Keeping with the Trend of the Times

*From the Country Calendar*

DO NOT throw up your hands in protest, Mr. Rusurbem, that you cannot dream of affording any such luxury as a motor-car. It is a co-operative scheme that I suggest—a large, comfortable conveyance that shall carry you and a chosen few of your best neighbors.

Let us say there are five of you, more or less congenial fellows, who take the 8:15 train for town every week-day morning. You live just a trifle too far from the station to walk, or you do not care for walking, so each of you keeps his own horse—which serves you little, perhaps, except for this morning and evening drive. For horse, vehicle, harness and other necessary trappings you paid an average of $400 apiece (a low estimate). That is, for the five outfits, $2,000. The maintenance of each horse we'll figure $1 a day, which for the five foots up to $1,825 a year. This is exclusive of the ministrations of stable boys, caretakers or coachmen.

Now look on the other picture. A first-class motor-car, either electric or gasoline, to carry five passengers besides the driver, can be bought for from $2,000 to $3,000. Its maintenance will cost less than ten cents a mile,—for the service contemplated, fifty cents a day would probably be an ample allowance. Thus, figuring the initial cost of the automobile as the equivalent of that of the five horses (with their necessary adjuncts); and offsetting the salary of the chauffeur against the stipends of five stable boys or caretakers, there remains a saving to each of you five gentlemen of ninety cents a day, or $328.50 a year. I have taken five merely as a likely and convenient number for this little demonstration. Figuring on a basis of six, eight, ten or twelve copartners in such a scheme, the saving to each would be proportionately greater.

So much in answer to the first question every American asks: Does it pay? But this, after all, is really the least important of reasons for advocating the co-operative automobile.

Motoring began as a pleasure, and the great majority of those who today "motor," or "mote," or "mobe," or "auto," or "drive the car," do so because they find it jolly good sport. The use of a co-operative motor-car would add zest to suburban life. The ride to and from the railway station would become a pleasure drive, invigorating and health-renewing. The motor-car travels so much faster than the best of horses that its users can, without inconvenience, live farther from the railroad, and thus enjoy lower rentals, or, if owners, larger, finer, more commodious properties, and, in all things, a country life rather than a suburban life.

Motor-cars are now made to carry any number of passengers, from one to fifty. Large cars at the resorts and watering places scattered all over the country are becoming popular for pleasure drives, just as the most popular way of "seeing" a city now is to do so from the top of a great motor-coach. The machines are geared to travel over any kind of road in any kind of weather and it is possible to climb any hill in an automobile, or even to race up the side of a mountain. Last summer there was held a climbing contest up Mt. Washington, and this summer there is to be another up Pike's Peak.

IN ANCIENT GREECE.

THE TRANSCONTINENTAL RACE—THROUGH THE MUD BELT. *From photos taken by the drivers.*

# Transcontinental Racing and Good Roads

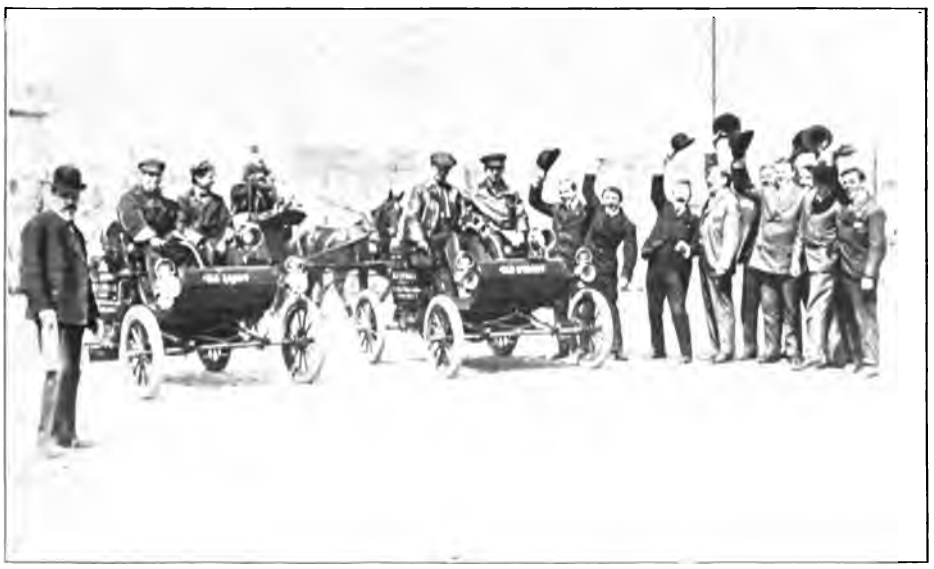
*By James W. Abbott*

THE HON. MARTIN DODGE, head of the office of Public Road inquiries, United States Department of Agriculture, has always been an earnest enthusiast on the proposition of transcontinental highways. At a Good Roads convention held in Denver in 1900, he gave first public utterance to the proposition for such an east and west artery.

A magazine article had appeared a short time before which had advocated an impossible boulevard 200 feet wide across plain, desert and mountain, which should have roadways, bicycle paths and sidewalks, as well as trees, flowers and grass, with occasional fountains and other accessories. Of course this was a wild conception, but it contained a germ of sense. We certainly ought to have more great national arteries which shall serve all kinds of travelers for trips of any length between points however distant. None can yet measure the benefit which the American people will derive from touring, and no general touring practice will be established without decent highways for the cars.

It has been for the purpose of calling attention to the importance of this question that I have tried to assist several transcontinental automobile tours. I am more interested in the contest now in progress between the two Oldsmobile seven horse-power runabouts, "Old Scout" and "Old Steady," from New York City to Portland, Oregon, than I have been in either of those which have preceded it, because I believe that this one can be so handled as to get for the whole subject of good roads the greatest possible attention. One result of it is going to be to rob such tours of many of their terrors. When the letter which has been written by Melville E. Stone to President Goode, of the Lewis & Clark Exposition, is published, it will in itself furnish a text for such discussion that will be sufficient for great results.

Another thing which is going to be strongly brought out is that right in the heart of our country, in the very richest of its agricultural domain, the people have been asleep to this great question and have not yet awakened to its economic importance. The farmers of Indiana, Illinois and Iowa have been contented to contribute a large percentage of their product to the "Mud King," but their results have been very different from those produced by the tithes of the Mormons. No tabernacles, temples, or business palaces have been erected with this fund, which has entirely vanished and all traces of it disappeared. When the people come to realize the difference between conditions of saving and waste, we shall have started upon the new era in American highway conditions.



THE TRANSCONTINENTAL RACE—THE START FOR NEW YORK, MAY 8.

THE TRANSCONTINENTAL RACE. *From photographs taken by the drivers Huss and Megargel.*

*h tell the story of the fight through the mud belt of Ohio, Indiana, Illinois, Iowa and Nebraska.*

## What Motor Should I Start With?

To many persons who look upon the automobile with longing eyes, the question of first cost seems most important. Others look beyond, to the item of maintenance. Still others are chiefly concerned as to whether they will be able to drive and take care of a car, or employ a man for one or both purposes. They want to know whether the average coachman or useful man can be transformed into a competent chauffeur without too great an outlay of time.

These questions are governed to a very great extent by such considerations as the special use to which the automobile is to be put—the demands likely to be made on it, the character of the roads it will have to traverse, and the distance, no less than the extent and style, of the stable which it is to supersede or supplement. As one's establishment is modest or elaborate, so must the motor vehicle or vehicles installed be. A capital plan is to proceed along lines broadly parallel to those applying to the horse and carriage equipment. An elaborate and finely appointed stable would laugh at a little runabout or a low-powered and low-priced semi-touring car set up alone; although, as an adjunct to a motor equipment, such cars are entirely fitting. If one desires merely to make a beginning with automobiles, to see how the experiment turns out, we advise getting a car developing from 16 to 24 horse-power, costing from $1,400 to $3,500, seating from four to six persons comfortably, and having a range of speed up to thirty or thirty-five miles per hour. Such a car would answer all ordinary family requirements.

A car of these specifications may well be held up to prospective users as embodying moderation in all essential respects. It would not be so cheap to operate and so easy to take care of a smaller car—say one of 10 or 12 horse-power—but it would be a compromise, possessing advantages over both the high-powered touring car on the one hand and the runabout on the other. Best of all, it could very easily be driven and taken care of by its owner, if he were apt at simple mechanics and willing to give a little time to the task of keeping it in order; or, the work could be done by a handy "useful man," leaving the owner free to drive the machine when he liked.

A LONDON MOTOR BUS.

"Snellpaardelooszoondeerspoorwegpitroolrijtung" is said to be the newest of the names of the automobile, and authorities agree that "Red Rover" and "Drab Devil" and "Blue Blazes" and even "White Whizzes" are outclassed. The unpronounceable is of Flemish derivation, and comes from "snell," which means rapid; "paardeloos," which means horseless; "zoondeerspoorweg," meaning without rails, and "pitroolrijtung," which implies that a thing is driven by petroleum.

ON THE ROAD TO PIKE'S PEAK—SCENE OF THE COMING MOUNTAIN CLIMBING CONTEST.

# The How and Why of the Automobile

## A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from May issue*)*

**VALVE TIMING**—Nothing, unless it is the quality of the fuel used, can have more influence on the power and working of an engine than the valve timing. For this reason engineers have been devoting a great deal of study to this particular problem, but as yet even the best authorities are not agreed on just when valves should open and close, so that at best the present practice is but a compromise. Experience has proved the best teacher, and now every motor is carefully tested until somewhere near the correct result is obtained, and then all engines of this design are built and timed accordingly.

The points of opening and closing of valves are designated in two ways: either in terms of degrees around the fly wheel, or distance moved by the piston in the cylinder. As it is much easier, after the motor has been assembled, to determine the position of the piston from marks on the fly wheel, the former method for setting valves has been almost universally adopted.

As soon as the engine is finished, two marks, diametrically opposite, are located on the rim of the fly wheel, such that when one is directly over the center of the main shaft, the piston will be at one end of its stroke, or in other words, when either of these marks is on top, the piston will be on one of its "dead centers."

Referring to Fig. 12 you will note that when the mark "H" passes a vertical line drawn through the center of the shaft, the piston has just reached the outer end of its stroke, and when the mark "C" comes into this position then the opposite condition is true. These points, as mentioned before, are respectively the head and crank end "dead centers."

Experiments have shown that the exhaust valve should open about 35 or 40 degrees before the crank arrives at the "crank end dead center." Therefore, No. 3 shows, approximately, relative positions of crank and piston when this opening should occur. In order to mark this position a line is drawn across the fly wheel at the point "E." Next, as the closing should take place from 5 to 10 degrees late, that is after passing the "head end dead center," the point "O" is located as represented in this position. The inlet, of course, opens immediately after the exhaust closes, so that

* This valuable series began in the March issue, back numbers will be sent upon receipt of regular price.

the point "P" is next marked off a short distance back of "O." Lastly, the time of closing the inlet is determined (this varies from 20 to 50 degrees after crank has passed the "crank end dead center") and the point "I" settled upon.

Having located correctly all points of opening and closing of valves, we are ready to proceed with the timing. Glancing at Fig. 13 you will notice that No. 1 shows the cam just about to raise the plunger which operates the valve, No. 2 shows the valve at its highest point, or maximum lift, and No. 3 the position of the cam and roller at the point of closing. You

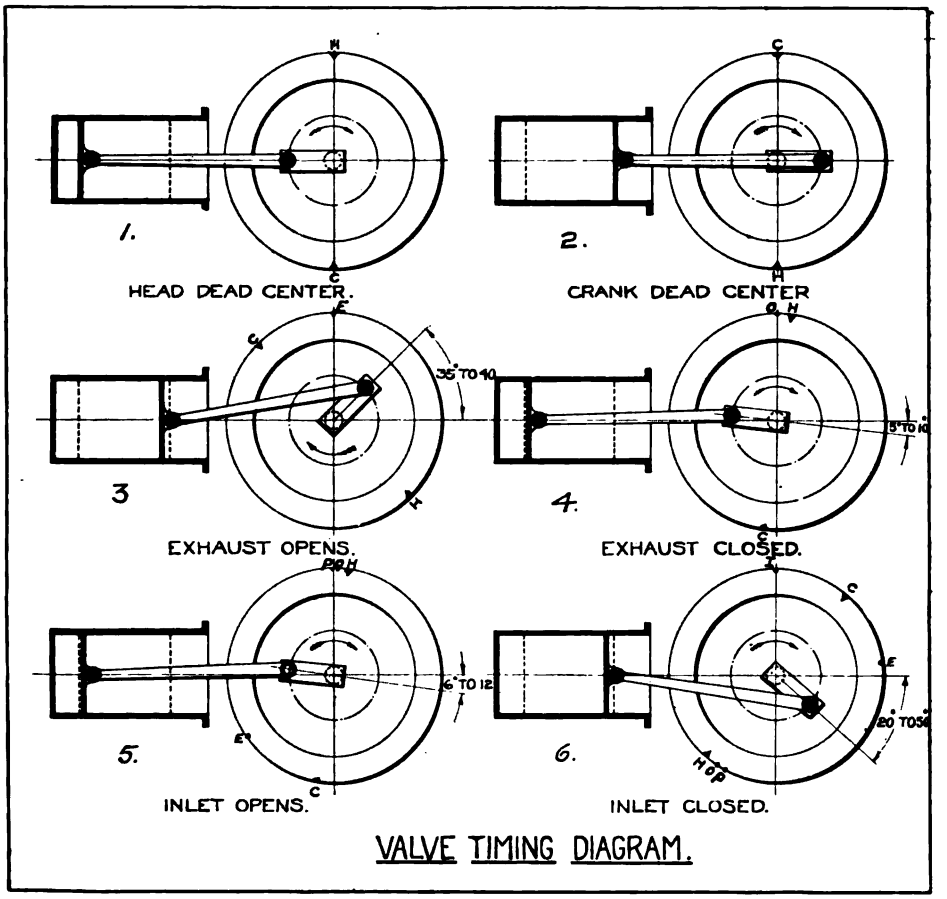



FIGURE 12.

will notice that a small amount of clearance is left in order to insure a proper seating of the valve when the cam has left the roller. It will easily be seen that as soon as the cam has turned far enough to cause friction between itself and the roller, the plunger will begin lifting the valve. As

long as the roller turns freely it may be assumed that the valve is resting on its seat, but as soon as it appears to turn hard it is taken for granted that the valve is beginning to open. Naturally, when the cam is leaving the roller, the reverse is true.

Now let us return to our original proposition, and see what use can be made of all this. We will first turn the fly wheel over with the starting crank until the point "E" is directly over the center of the crank shaft.

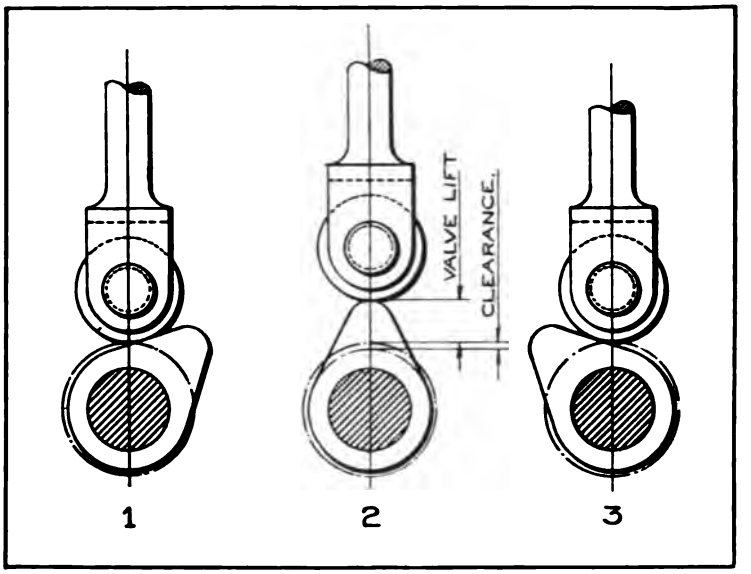



FIGURE 13.

According to our calculations, the exhaust valve should be on the point of opening. Place your hand on the roller at the bottom of the valve plunger, and see whether or not it turns freely. If you find that it moves easily, turn the engine a little further in the direction of the arrow. A slight movement should cause the roller to tighten; if it does not, it shows that the cam has not yet come in contact with it, and hence the valve will not open soon enough. In this case turn the wheel back to its former position, and move the cam back around the cam shaft until the valve begins to open at the proper time. Frequently, in doing this, however, you will find that it will be impossible to make the valve close properly, and in that case it is necessary to braze a small piece on the side of the cam to increase its width in order to hold the valve open its required time. Having adjusted the opening, turn the fly wheel around until the mark "O" shows up on top, and proceed in a similar way to find whether or not the roller frees itself at the right moment.

Assuming that the exhaust valve has been satisfactorily disposed of,

let us direct our attention to the inlet. Turn the fly wheel over as before until the point "P" is just over the shaft. Then try the roller to see if it is just beginning to stick. If this is true, we can go on; if not, the same method of procedure has to be followed as in the case of the exhaust valve. When the time for opening has been adjusted correctly, revolve the wheel

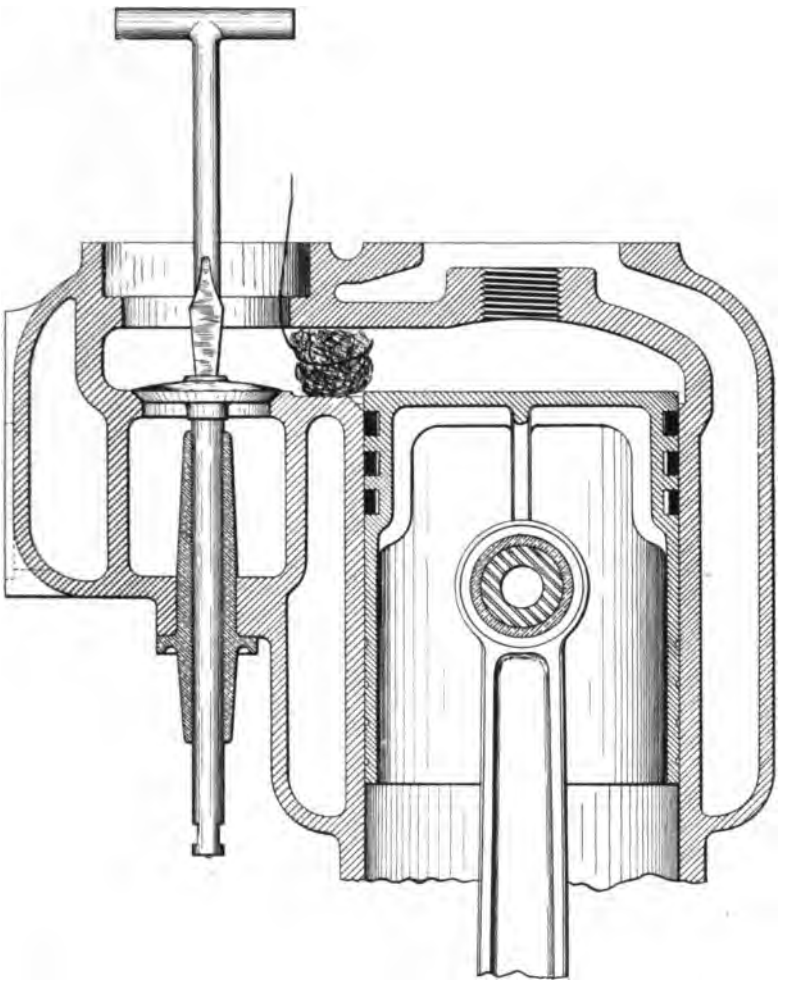


FIGURE 14.

until the mark "I" comes into position, when, of course, the roller should begin to loosen. After a little practice, by simply changing the shape of the cam either by filing off or adding to its surface, you will be able to secure the results desired.

Each engine requires a slightly different valve timing, so it is im-

possible to give definite data regarding the above. Each manufacturer furnishes an instruction book which gives detailed information regarding proper valve timing to be used for any particular size of motor. Diagram No. 12 may be made of considerable assistance by properly substituting the values of angles given in the instruction book.

**VALVE GRINDING**—Coupled with the knowledge of valve timing there should be a good understanding of the method of valve grinding. No matter how carefully the valves may be timed, the engine will still lack power if the valves are leaky and not properly seated. You have all, no doubt, noticed how glass stoppers are ground into bottles in order to secure water-tight joint. The grinding of valves is done in practically the same manner, and for virtually the same object. Having first considered the end to be obtained, let us see how it is accomplished: First, above all things, stuff a large piece of waste, tied to a string, into the chamber leading into the cylinder, thus making sure that no abrasive substances, such as emery, can enter the combustion space proper. This precaution is necessary because it sometimes happens that the emery used in grinding works its way in between the piston and cylinder walls, and badly scars the surface of the cylinder and rings.

Next take off the spring and attachments, and lift the valve out of its seat. Examine both the surface of the valve and its seat carefully, noting any defects or peculiarities. Then coat the seat with a mixture of emery flour and oil, and place the valve back in its former position. Insert the wrench as shown in Fig. 14, and grind the valve into place, being careful to examine both surfaces now and then to insure that there is no foreign substance present which could wear grooves in the seat. It is only necessary to press down very slightly on the valve when grinding, the best results being obtained by simply twirling the valve around, and lifting it once in a while to prevent wearing in one place. The grinding should be kept up until both surfaces are in contact at every point, and the joint absolutely tight. A good way to tell when this has been accomplished is to remove the valve and wipe the surfaces clean, then apply a coating of Prussian blue. Upon replacing the valve and turning a few times all points not in contact will still remain blue, while the remaining portions will show up bright. As soon as the whole surface becomes bright the valve may be withdrawn, and the emery and oil washed out with kerosene. After a little practice one becomes very expert at it, and will soon be able to "grind in" a valve in a very short time.

(*To be continued*)

NOTE.—It is the purpose of the author to take up, in this series, every part of the motor separately and explain in as clear and simple language as possible the function of each and at the same time show the co-ordination of the individual parts.

Thus far he has dealt with the cylinder and valves alone. The next few articles will have to do with the reciprocating parts, that is, the piston and connecting rods. Following this, crank and crank case design will be discussed and illustrated by drawings and charts, showing up-to-date methods of construction.

THE FAMOUS PIKE'S PEAK ROAD.

# MOTOR TALK

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## Among the Clubs

The Automobile Club of Toronto has entered upon its second year. Its officers are: President, W. A. Kemp; vice-president, M. C. Ellis; secretary-treasurer, Mark H. Irish; directors, A. E. Chatterson, F. W. Baillie, John C. Eaton, John P. Parker, S. Frank Wilson, J. J. Main, Cromwell Gurney and Dr. P. E. Doolittle.

The following officers have been elected for the Portland, Ore., Automobile Club: President, Solomon Blaumauer; vice-president, R. D. Inman; secretary, David Honeykan; treasurer, C. B. Brown; directors, D. C. O'Reilly, C. B. Brown, R. D. Inman, William Lipman and Solomon Blaumauer.

At the recent annual meeting of the Peoria Automobile Club the following officers were elected: President, H. B. Onken; vice-president, William Turner; secretary, R. A. Whitney; treasurer, William H. Reese; directors, J. B. Bartholomew, M. E. Magruder, A. E. Augerson and S. K. Hatfield. Twelve applications for membership were favorably acted upon.

The Chicago Automobile Club has issued for distribution among its members a handsome and artistic booklet containing its constitution and by-laws, together with a list of its officers and members. The book also contains several excellent photographic reproductions of interior views of the club rooms.

The automobilists of Olean, N. Y., got together recently and organized the Cattaraugus County Automobile Club, electing the following officers: Dr. A. E. Smith, of Olean, president; C. R. Gibson, of Salamanca, vice-president; W. F. Persons, of Delavan, secretary, and Clare Willard, of Allegheny, treasurer. A board of governors was elected, composed of the officers named and the following: A. T. Fancher, of Salamanca; Daniel P. Ray, of Olean, and Charles Smith, of Portville. The club begins life with thirty members.

At the annual meeting of the Columbus, Ohio, Automobile Club the following officers were unanimously elected for the ensuing year: President, Dr. Clovis M. Taylor; vice-president, William Neil; treasurer, E. W. Seeds; secretary, Dr. C. A. Howell; C. E. Firestone, Roy Repp and Byron Ellis were appointed a committee on club runs and local contests. The proposed meet for July 3 and 4 was discussed and progress reported by the several committees. The club is in splendid financial condition and has a promising future. It is now occupying its new quarters, which were dedicated two weeks ago. The rooms are graced with some of the furniture which was used in the Ohio building at the St. Louis exposition.

## Motor Talk Calendar

JUNE

7, . . . Children's Outing, New York Motor Club.
10, . . . New York, Morris Park Race meet.
16–17, . . Charter Oak Park, Hartford, Conn.
17, . . . Empire City track, Yonkers, N. Y.
21, . . . Baltimore, Md.; A. C. of Maryland.
24, . . . Philadelphia, Pa.; A C. of P.
28–29, . . Pittsburg, Pa.; Pittsburg A. C.

JULY

3–4, . . A. A. A. meet at Morris Park, N. Y.
4, . . . Columbus, Ohio; Columbus A. C.
6–8, . . St. Paul, Minn.; A. C. of St. Paul.
8, . . . Empire City Track, Yonkers, N. Y.
15, . . . Glidden Trophy Touring-Car Contest.
15, . . . Morris Park, N. Y.
22, . . . Empire City Track, Yonkers, N. Y.
29, . . . Morris Park, N. Y.
31, . . . Automobile Field Day, Lewis & Clark Centenial, Portland, Ore.

AUGUST

1–2, . . Grand Rapids, Mich.
4–5, . . Detroit, Mich.; Automobile Club of Detroit.
11–12, . . Cleveland, O.; Cleveland A. C.
15–Oct. 15, W. K Vanderbilt, Jr., Cup Race.
18–19, . . Buffalo, N. Y.; Buffalo, A. C.

SEPTEMBER

4, . . . Boston, Mass.; Massachusetts A. C.
9, . . . Providence, R. I.; R. I. A. C.
23, . . . Morris Park, N. Y.
29, . . . Poughkeepsie, N. Y.
30, . . . Empire City Track, Yonker N. Y.

# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

JULY 1905

MASTER WILLIAM BULLARD, AGED 11, OF NEW BEDFORD, MASS. HAS GREAT SPORT WITH HIS FATHER'S CAR.

# The Boy and his Oldsmobile

¶ We have a proposition of interest and profit to you as a bright, wide-awake American boy.

¶ Isn't it true that you are never so happy and independent as when you are earning your own pocket money—when you are "doing something?" Enterprise appeals to your imagination—arouses your latent activities—makes a man of you.

¶ Out-door sport appeals to you as a live boy, and of all out-door sport, the automobile is king.

¶ Boys, here's your chance! The Oldsmobile is the machine you know about—the one you want. You can own one if you have a fair amount of energy and hustle—in other words, if you are a live boy.

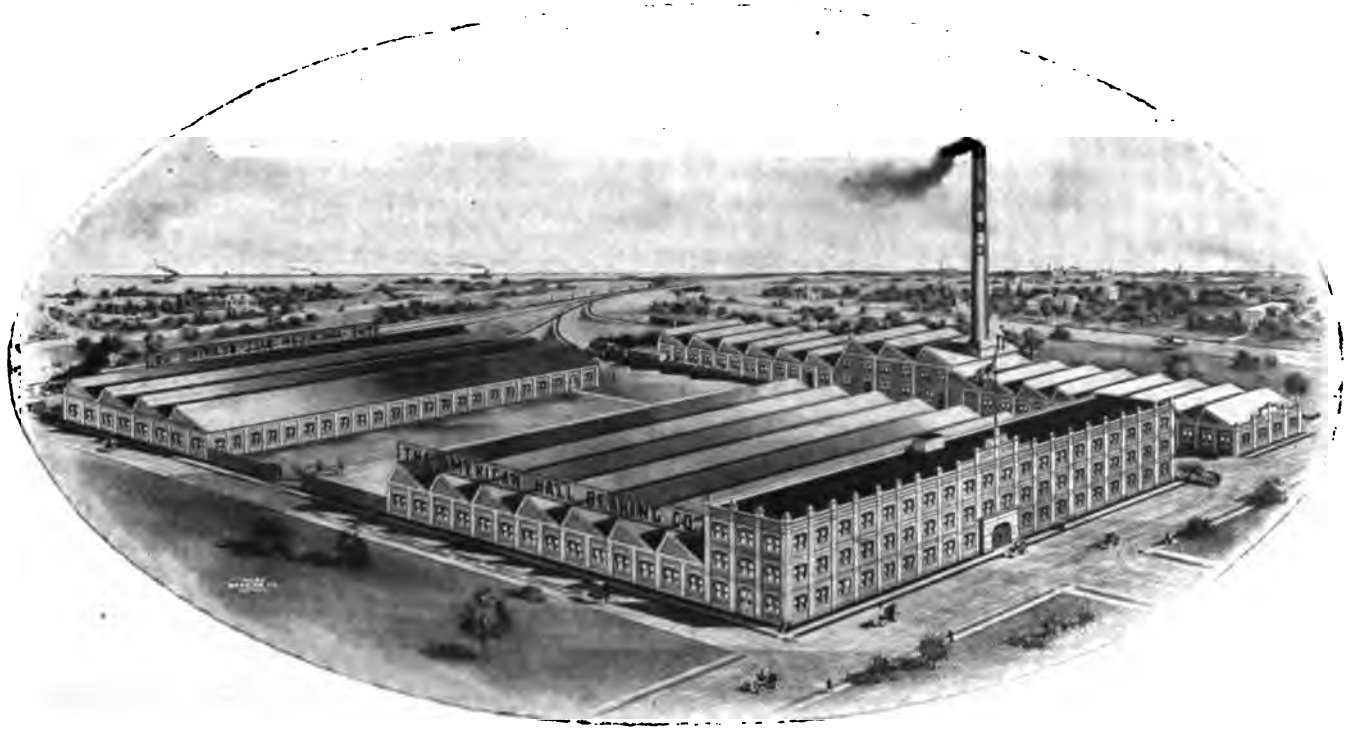
¶ Our proposition offers you not only a chance to own your own machine, but to earn some easy pocket money as well. We are offering over $2,000 in prizes for work which can be done in your spare time, leaving you all your usual time for play.

¶ We want to tell you all about it, and want you to sit right down and write us a letter asking for information. Send a two-cent stamp for a "Message to Boys" and get the information regarding this interesting proposition before the other boys in your neighborhood awake to its possibilities. Don't let the other fellow get in ahead. Address Dept. 50.

## Olds Motor Works, Detroit, U. S. A.

Member A. L. A. M.

**The output of complete front and rear Automobile Axles of this plant exceeds the capacity of all competition combined**



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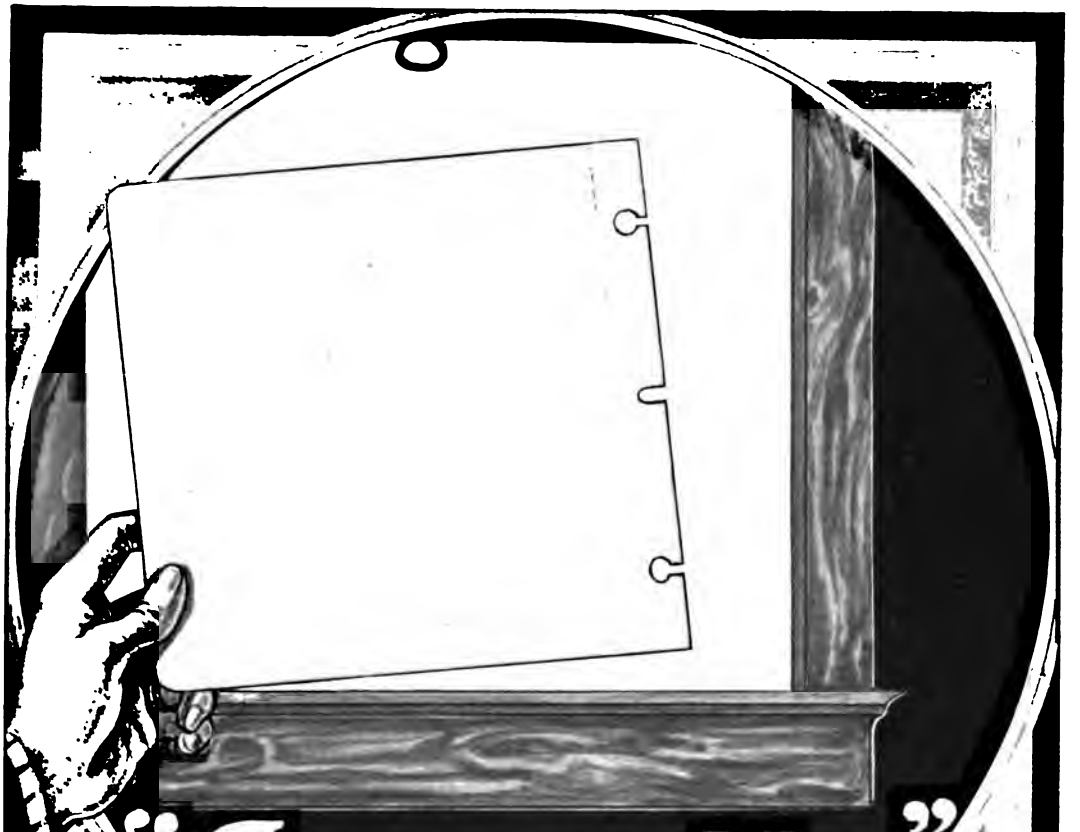

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THE TRANSCONTINENTAL RACE.—OLD SCOUT IN THE LAVA FIELDS OF IDAHO.

# MOTOR TALK

A MAGAZINE OF OUTDOOR SPORT

VOL. I. JULY, 1905 No. 7

## An Ocean to Ocean Race

### An Account of How Old Scout Made the Remarkable Run Across the American Continent

*By Dwight B. Huss*

IT DIDN'T worry me much, at the time, that exciting ride down Seven-Mile mountain in our descent of the Cascades, when a slip or the loss of control of Old Scout meant a plunge down hundreds of feet to almost certain death, nor did, for that matter, the thousand and one incidents and accidents of the 3,500 miles of almost unknown roads, but to write about it—that's a different proposition.

"I can get up a good case of worry just at the thought. Megargel now is up to this sort of thing. He knows how to make you see things by the use of his pen. Wigle and I saw things all right, and did a few, but we were pretty busy most of the time with our minds pretty intent cutting down the miles and avoiding the unexpected, but if you insist on our story, you will have to hear it in the only way I can tell it—the way it happened.

"When we left New York City on May 8 at 9:30 on a bright Monday morning, our spirits were high, and the way looked easy ahead. In fact, the way through New York and pretty well into Ohio was easy. It was not until we had left Omaha behind that Wigle and I began to realize what a trip across the American continent means.

"The drive to Chicago, which was made in seven days, was a familiar one to me, as I had covered the same route last year with the St. Louis tourists. A two-weeks' rain just before we crossed Illinois, Iowa and Nebraska, made the roads of those states soft and sticky beyond description. Only those who have driven over the 'Gumbo' roads after a rain can understand the difficulties we encountered.

"We rode in mud up to the hubs at times, and I have seen the wheels many a time with so much 'Gumbo' sticking to them that they would weigh 250 to 300 pounds each. All through these states, and in fact, until we reached Omaha, Old Scout and Old Steady stuck pretty well together, neither one caring to have the other get very far out of sight.

"I am not going to try to describe that fight through the mud belt—one continuous nightmare of mud as it appears looking back now. On the trip to Omaha both machines had carried as light baggage as possible, each having about 200 pounds weight aboard beside the drivers. At Omaha we equipped for the wilder country ahead, taking on extra tanks for desert driving, sand tires, fire arms and cooking utensils, all of which increased the weight materially, so that when the machines left Omaha each had a load of practically four full-grown persons.

"The farther west we traveled the more interesting grew the country. On May 31 we reached Archer, eight miles from Cheyenne, at 8:30 in the evening, and were met by an enthusiastic crowd of automobilists. We reached Cheyenne at 10 o'clock. If you had seen that procession come into town you would have smiled. You would have seen Old Scout towing another car, besides carrying two passengers in each rig.

"We will not mention the name of the car, because it might cause some hard feelings. The next night we spent at Laramie, which we left in the morning in company with a White steamer bound for Goldsmith. We left the town at 8 a. m., taking a northwesterly course. Then we ran up against a small river.

"The only thing to do was to cross, so Old Scout took a flying leap and managed to get over, but not so well with the steamer, as she stopped in the middle and her

fires went out. Rope and tackle were used, and in an hour she was on dry land. In the next four hours we had forded four streams. We got as far as Medicine Bow at 7 o'clock, and just outside of the village we ran into the first sink-hole on the trip, and Old Scout dropped almost out of sight.

"We got a man to help us out, and with the aid of our tackle got on land as darkness overtook us. I hired a man to watch the car, and Wigle and I went back to the village to bed. Old Scout stayed out in the cold. We left Medicine Bow the next morning at 4:30, thinking we would make a long run that day. At 1:30 we were at a small station on the Union Pacific, just 35 miles from our morning start.

"I don't want to say much about the roads between these points, because it takes more than a pen to describe them. I don't know how Old Scout ever lived through it, but she did. We forded five big creeks, driving over rocks and stones, and so much sage brush that Old Scout's radiator looked like a badly twisted piece of tin. At last we found the railroad, and we both swore to stick to the Union Pacific the rest of the trip. The everlasting sage brush was one of the worst nuisances we had to contend with.

"We left Sage Tuesday morning bright and early, after having had a good night's sleep at the section boss's house. We took the main road along the railroad and drove about five miles, when the road left the railroad and started off through the sage brush. As we could see no other road we were sure we had the right one. We drove two hours and landed up against a large ranch down between some mountains.

"We asked the distance to Cokeville and found we were farther away than when we left Sage. We were both very much disgusted, as we had to go back over the same trail to the railroad. After skirmishing around in the sage brush for some time we found the tracks and arrived in Cokeville at noon, having covered 50 miles, and going only 15 in the right direction. We had dinner and left for Soda Springs.

"We chased up and down hill all the afternoon and managed to get to Soda Springs at 7 at night, covering about 75 miles. We left Soda Springs at 6:30 Wednesday morning and got nearly to McCammon, where we found a bridge out and a river too deep to ford. We had to turn back, and after going through several lanes, crossing fields of sage brush, and fording two creeks we found a bridge and crossed the river.

"It was in making this detour that Old Scout had a narrow escape. We were on a very steep hill—so steep, in fact, that it was impossible to hold the car—which skidded down the hill and over a 12-foot embankment into a ditch. Our good luck was that the ditch was dry. Wigle and I had a hard time getting the car out, and were surprised to find the car still hanging together. The front axle was so badly bent that the wheels were on a slant of 15 degrees. We drove 30 miles in that condition to Pocatello, where we spent part of the night and Wednesday forenoon getting things straightened. We found we had one advantage with our bent axle—the wheels fitted the 60-inch track, while before, ours being 56-inch, would not.

"We left Pocatello at 2:30 Thursday afternoon and drove to Ross Forks, the roads being very good. After leaving here, we had gone but a short distance before we were hub deep in sand, and Old Scout gave a few grunts and stopped. As we had carried sand tires we thought this was a good chance to test their efficiency. After the tires were on, we started and the way Old Scout performed with those tires was a wonder. We had six miles to go and we were only 30 minutes going. We arrived in Blackfoot at 6 and decided to stay all night, as the next station was 60 miles, across the Great Snake River desert.

"On June 10 we pulled into Boise, Idaho, at 4:30 in the afternoon, after a pleasant ride of 90 miles. The roads were an improvement and really were the best we had had since leaving Chicago. We were met by a big delegation, headed by a Mrs. Taylor, and were escorted into town. That wasn't enough—they gave us a banquet and the keys to the city. The banquet was most enjoyable. Three days before we were in a cloudburst and as a result of the drenching, I suffered from a severe cold. And as we appeared to have a safe lead on Old Steady, who we lost shortly after leaving Omaha, we decided to rest here a day or two.

"After we left Boise, I felt in good fighting trim, and on June 15 we reached Ontario, Oregon. Here we were met by James W. Abbott, the good roads man, who had started from New York at the same time we did, and had headed us off at different points by railway. He gave us all the information possible regarding the Oregon roads, and it was meager to say the least. The day before we reached Ontario a large touring car arrived from Portland, having come up the Dalles 100 miles by boat, there being no road that way.

"The chauffeur reported incredibly bad roads until he struck the one which we were to follow. From that point he came along with little difficulty. This was encouraging to us, and we left for Burns in high spirits. As a matter of fact, we found the roads through Idaho and Oregon the

AT CANNON CREEK, IDAHO.
AMONG THE SHOSHON INDIANS, IDAHO. MOUNTAINS AHEAD. HUSS MAKES FRIENDS.

A WAYSIDE INN, WYOMING. OLD SCOUT IN WYOMING. HUSS AMONG THE ROCKIES.
OLD STEADY ENCOUNTERS DIFFICULTIES.

best west of Chicago. The run across Oregon was an exciting one, and on the Cascades we encountered one or two experiences thrilling enough to last a lifetime.

"It was on Monday afternoon when we began the descent of the Cascades, following the Santiam road, which necessitated the descent of Seven-Mile mountain. So rapid was the descent that it was impossible to hold the car. All brakes were set and the rear wheels were sliding, and Wigle, who was holding to the rear, was dragged nearly the seven miles. I held my breath as well as the steering lever, and expected every minute to be dashed down into the canyon several hundred feet below. This was by far the most exciting adventure of our trip.

"Tuesday night was spent at Lebanon, and Wednesday morning we reached Oregon City, where we were met by a delegation of local autoists representing the Portland Automobile Club, under whose escort we ran into Portland, reaching there at exactly two minutes to 1, just one hour before the opening of the National Good Roads Convention, to which I had been appointed delegate by Governor Warner of Michigan.

"Our reception was wildly exciting, and the streets were packed with cheering people. We were taken to the Portland Club for lunch and then to the Exposition grounds, where I delivered to President H. A. Goode of the Exposition the message which I brought from Manager Melville E. Stone, of the Associated Press. We were then escorted to the convention hall, where I presented my credentials as a delegate, and the message from Mr. Stone was read. It was as follows:

"'New York, May 5, 1905.

"'Hon. H. A. Goode, President Lewis & Clark Centennial Exposition, Portland, Ore.:

"'Dear Sir—I have peculiar pleasure in complying with a request that I send you a greeting to be conveyed by automobile across the continent.

"'The century which has just passed was chiefly notable as the century which developed inter-communication. It was the century out of which came the ocean steamship, the railway, the telegraph, the cable, the telephone, wireless telegraphy, rotary and perfecting printing presses, stereotyping, news gathering associations, and the newspapers.

"'But nothing could better illustrate the progress of 100 years than a comparison of this new expedition by a twentieth century motor car from the Atlantic seaboard to the land "where rolls the Oregon," with that other expedition of Lewis & Clark, which meant so much for our common country and the world's civilization.

"'With all good wishes, I am sincerely yours. (Signed)

"'MELVILLE E. STONE.'

"After the reading of the message I was called upon for a speech, which was a harder job possibly than this one. Like most trying things, I felt better after it was over, and our first day in Portland closed with a triumphal parade through the streets and Exposition grounds, of the Portland Automobile Club, headed by Old Scout. We went to bed that night mighty pleased with ourselves for having made the first automobile trip across the continent from the Atlantic to the Pacific, and for having made it in the very creditable time of 44 days, or 40 days of actual running time."

## The Transcontinental Race

Old Scout, driven by Dwight B. Huss and Milford Wigle, of Detroit, won the transcontinental race which started from New York city on May 8. Portland was reached on June 21, at 12:58, just one hour before the opening of the National Good Roads Convention, to which Huss had been appointed a delegate by Gov. Warner, of Michigan. The run of over 3,500 miles was made in 44 days, or 40 running time.

Old Steady, driven by Percy F. Megargel, of Buffalo, and Barton Stanchfield, of Lansing, reached Portland on June 28, just one week after the winners.

Dwight B. Huss, winner of the $1,000 prize offer to the successful contestant, tells the story of the race in this issue. Megargel's story will appear in a future issue.

From start to finish the racers were followed by rail by James W. Abbott, special agent for the Rocky Mountain district of the office of Public Roads Inquiry of the United States Department of Agriculture, who has taken their reports of the road conditions and will use this information as the basis of a valuable report.

# National Good Roads Convention

## Fifth Annual Meeting Held at Portland, Oregon, June 21-24, 1905

THE fifth annual convention of the National Good Roads Association was held in the auditorium of the Lewis & Clark Centennial Exposition at Portland, June 21st to 24th. The convention was enthusiastic and well attended, the only incident occurring to mar the harmony of the occasion being the bitter contest for the presidency. The candidates were W H Moore, the present president, and Col. R. W. Richardson, the present secretary. The contest was finally settled by Col. Richardson withdrawing, and an action of the convention in deferring the election until November, at St. Louis, Mo.

The convention was opened on June 21st by President W. H. Moore, delegates being present from all parts of the northwest and eastern states as well. After the call to order President Moore introduced Stephen S. Wise, of Portland, who delivered the invocation. President Goode then delivered a short address of welcome to the assembled delegates and visitors.

"It is particularly appropriate at the present time," said Mr. Goode, during the course of his remarks, "that we should have with us to-day the winners of the 44-day automobile race from New York city. The direct bearing that such an event has on the condition of public thoroughfares makes the presence of these two gentlemen an interesting feature of this convention."

Attorney General Crawford, representative of Gov. Chamberlain, made the second address of welcome, his remarks being in part as follows:

"We do not expect that you will be able to show us how to build good roads without money or labor, especially over our lofty mountains, some of which I once heard an orator say 'are so high that the recording angel can stand on their snow-capped peaks and trace the history of the world upon the face of the sky,' but with your kind assistance we can add greatly to our knowledge of the art.

"Hoping that your stay with us will be as full of pleasure and profit to you as I

OLD STEADY MEETS A RELATIVE IN WYOMING.

know it will be to the citizens of Oregon, in their behalf I once more bid you one and all a most cordial and hearty welcome."

President Moore then introduced to the audience Dwight B. Huss, one of the drivers of Old Scout. Mr. Huss was clad in a leather jacket, and gave every evidence of having passed through a very trying ordeal in making his record-breaking trip across the continent.

"You have better roads in Oregon than in any other state west of Chicago," began Huss, and the local delegates to the convention drowned out further remarks in a storm of applause. When the applause had subsided the speaker continued, "I am satisfied that with a little work Oregon could have as good roads as New York and Ohio.

"My remarks about some of the roads over which we passed would be unfit to print. However, when we hit the Willamette valley our spirits rose like a thermometer in hot water."

Col. R. W. Richardson, secretary of the l Association, presented his annual report, which was in part as follows:

"The first National Good Roads Convention which met in the city of Chicago, November, 1900, appointed a special committee to draft articles for the formation of a permanent National Good Roads Association. The report of this committee created the present National Association. W. H. Moore was elected president; Edwin A. Potter, treasurer; myself, secretary, and Hon. Martin Dodge, Government Director of Roads, advisory.

Under the articles adopted the membership is composed of representatives of the various commercial, industrial and agricultural organizations, the purpose being to unite all these interests, for a system of permanent public roads for the states and territories. The management and affairs of the association are placed in the hands of an executive committee, composed of the officials and four representative members to be selected by the president.

"The association has stood for the principle of national aid for the building of permanent postal and interstate roads and national trunk line highways. There is a growing and favorable sentiment for this principle. There are now pending in the Congress of the United States measures providing for the general government giving substantial aid to the states in the establishment of a uniform system of permanent surfaced public roads, commensurate with the needs and demands of this great country."

At each session of the convention enthusiastic papers were presented followed by valuable discussions. At the close of the session it was decided to hold the next annual convention at St. Louis, Mo.

## Automobile Maxims

*By Richard B. Glaenzer in Outing*

By their toots ye shall know them.

Keep thy lamps lit and so avoid litigations.

See that thy brake break not, lest thou be broken.

Tho' thine auto show the strength of two-score horse keep one more in thy stalls.

A trained hand is best with a train at hand.

In thy speed, mock not the gentle cow—the cow-catcher may catch thee.

Wiser than his own generation is he who knows his auto.

In the morning slow thy speed, and in the evening withhold thine hand.

None are so fined as those who don't flee.

An auto at speed is a fiend indeed.

Let repentance be thine, if thou be among them who have mistaken "gaol" for "goal."

More discreet is an angel husband than an injured plaintiff; and lo, a widow's heart may be swayed by resilient tires.

To-day thou ridest in thine integrity; to-morrow may discover thee a man of parts.

Where law ends, speed really begins.

Haste makes "chased."

Autos with glass windows should not break bones.

A fool and his tonneau are soon carted.

It is well to know thine auto; yea, also, to know thy chauffeur better.

There's many a nip on an auto trip.

Give not thine auto a name; thy neighbors will name it for thee.

A fair exchange is no garage.

Why raise thine eyes to the weathercock, when thou hast a nose for the passing auto?

Take care of the pennies, the garage will take care of the dollars.

Pity not thine horse, which can boast both sire and dam; thine auto hath no damn but thine to comfort it.

## The Care of Good Highways

It is conceded that the building of a good road is little more than the first step, for practice shows that any road, however well built, will go to pieces unless constantly watched by competent men and at the first signs of breaking down the proper remedy is applied. Too much attention cannot be given to maintaining the roads which have been built at great expense. In foreign countries the roads have constant care and attention, which accounts for the fact that they are good the year around.

# The Poetry of Motoring

## An Impression of An Autoist by Louis Vincent

*In The Car, London*

TO the man who does not motor—that unfortunate man who has never known the joy of spinning along country lanes in the early morning of summer or late o' nights by the sea, and in the flaming sunlight, when soft breezes carry cool delight, through leafy byways and fields of scarlet poppies making a soft, velvety carpet of imperial red, across wild moorlands with a screaming wind to face, a wind that is scented with the fragrance of heather and golden furze, a wind that fires you with exhilaration of life and the joy of life—to such a man the motor-car can be nothing more than an unimaginative, moving mass of metal that smells of petrol and makes evil noises.

There are even some motorists who have never absorbed the spirit of the car as a thing of life and feeling, a genie of Pegasean potency encircling the world in a breath.

The sensation of soaring through space, the sense of power and velocity, gives one kinship with the eagle.

But the real romance of the motor is when the virgin freshness of morning and the long, drowsy, lotus-like afternoons of midsummer wane, when the sun sets in a lurid glory of crimson like a galleon sinking in a sea of fire, and darkness falls on the earth.

Then one revels in a sense of utter material detachment. Everything assumes a form of poetic unreality, like a Corot pastoral or a Whistler nocturne.

The dreamy orchestra of the night—the twittering of sleepy birds, the flue-like sighing of wind-swept boughs and waving grasses, and occasionally the sound of a human voice—a fragment of rasping discord—and through it all the leit motif,

A TYPICAL ENGLISH INN—A FAVORITE RESORT FOR AUTOISTS.

master note, the sweet, melodious hum of the car, and when the harsh sounding horn cries a hoarse note of warning it becomes a Wagnerian opera, with its plaintive expression of human hopes and love and passion.

Leaving the country and entering towns of stunted, barrack-like houses of brick and mortar—a monotony of squalor and ugly realities that the kindly hand of night touches with a crude, unearthly beauty, blotting out ugly, bare outlines and investing meanness with simple dignity, and even when the noise and lights of the town spring up the illusion remains, the commonplace is gilded. Monstrous electric trams with clanging bells and yellow lights sail backward and forward with what seems a clumsy attempt at speed, and the car flying past like a bird on the wing, responding to a pressure and turning and gyrating through the traffic with an easy diffidence which puts to shame everything else on wheels.

Soon the noise of the town reaches its climax, and then there is a gradual cessation of sound, and the car moves forward through silent, straggling streets.

There is joy in motoring through the long still hours of a night in June, through hop-scented Kentish lanes or Sussex byways. On a night when hardly a breath stirs the petals of the roses, when the great white moon and the clustering stars glisten over the green countryside like a searchlight on the sea. An ineffable peace seems to settle on the earth. The world like a tired child has gone to bed, and even the throb of the engine sounds subdued as though in the face of such a stillness it were afraid of the sound of its own humming bee-like voice. It is a silence that can be felt, and one feels that speech would be as much an irreverence here as in the grey cloisters of an ancient abbey, where the weary voice of the monks cried out over the sins of the world. Before the dawn the moon is obscured in a cloak of grey cloud and the air shaking the trees from their slumbers strikes raw and cold. A thousand strange whispering noises spring into being like the scrapings and tunings of an orchestra before a burst of harmony. It is the prelude to the dawn of a new day. Life-like a mighty current of rushing waters is breaking through the floodgates of sleep. Grey tints break into the black armor of night. The driver, smitten by the contagion of movement, presses the horn, and we start nervously and yawn automatically.

We find our voices. Early marauding birds fly past us with shrill squeaks of greeting, and then as the new day unfolds and takes shape, the whole voice of nature cries out with a mighty murmur in a thousand blended notes. The miracle of birth has been accomplished.

The blue smoke from the chimney of an old inn gives us cheer, and we are soon seated, talking and chattering like noisy city sparrows, round a piping hot country breakfast and the car reposes in the shed.

## Mr. Choate and the Tramp

Mr. Choate's love for motoring is well known and perhaps (remarks M. A. P., London) explains his boyish exuberance of spirits. Here is a little adventure of which he was the hero, when he was journeying in Hertfordshire last summer. The chauffeur was driving, Mr. Choate was sitting beside him, and Mrs. Choate occupied a seat in the tonneau. I forget the name of the place to which the party was going, but they lost their bearings. No sign-posts were visible. The only indication of life was a disreputable-looking tramp sitting by the roadside some distance off, apparently oblivious to everything and everybody, as is the manner of his fraternity. "Let's ask the tramp," suggested Mr. Choate to the driver; "perhaps he'll know the way." "I don't think so," replies the latter. "Tramps in this country invariably keep to the main roads, and only know the way from one union to another." "Anyway, we'll ask him," said Mr. Choate. The car pulled up. "Can you tell me the best road to ————, my man?" said Mr. Choate. "Yus!" said the tramp, "I'm going that way myself." The tramp indicated the road, and explained the turnings. Just as the car was about to move off, however, he, acting on their motto, "Nothing ask, nothing get," said, "Give a poor man a lift, sir." "By all means," said the U. S. representative at the Court of St. James, with a merry twinkle in his eye. "Get right alongside Mrs. Choate." Mrs. Choate, probably like the immortal parrot, thought a great deal, but she gathered her skirts together and made room for the tramp in the tonneau, where he lolled in luxurious ease until he was deposited at his destination.

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The progressive Japanese have not failed to learn the merits of the automobile and to show their fondness for it. Recently, while in this country, Korekiyo Takahashi, special financial commissioner of the imperial Japanese government, member of the House of Peers, and vice-governor of the Bank of Japan, who supervised the flotation of the Japanese war loan of $150,000,000, completed an automobile tour of Westchester County, N. Y. Accompanying him was his suite of six noted Japanese financiers.

OLD SCOUT IN FRONT OF AMES MONUMENT, WYOMING, 10,000 FT. ABOVE SEA LEVEL.
OLD STEADY AMONG THE SAGEBRUSH, WYOMING.
OLD SCOUT IN WYOMING. OLD SCOUT FINDS A PIECE OF GOOD ROADS IN WYOMING.

# Popular Demand for National Aid

## By A. C. Latimer, U. S. Senator from South Carolina

*From Good Roads Magazine*

THE enactment into law of any great measure affecting the welfare of the masses of the people is rarely, if ever, accomplished without the strong moral support of the people themselves. Measures which come before the national congress for consideration may, broadly speaking, be conveniently divided into two classes, namely, that class which embodies the individual ideas of the various members of congress proposing policies, or setting out schemes for the solution of the many intricate problems which confront us, and that other class which embodies the demands of a part or a large body of the people for the enactment of such laws as are necessary to meet certain known exigencies that already exist. The people are little given to experimenting, and it is found, as a rule, that the actual need of emergency has arisen before their voice is distinctly heard in the legislative hall.

The first class of measures rarely commands the serious attention of congress. They are usually introduced for "home consumption," and serve their purpose by directing the attention of the electors to the views of their representatives.

The other class is always important. They generally deal with economic or industrial problems, and are nearly always the slow fruit of the experience and well-considered views of the people. They are generally a demand for relief against some injustice, inequality, or oppression. The people are indifferent to the ambitious schemes of politicians, though they may be often the subject of them. Busy with the every-day problems of life, they hold always in view the practical solution of every question, and when convinced that certain legislation is necessary in order that practical results may be obtained, no amount of hide-and-seek behind specious arguments, or political combinations, will serve to obscure their view or bind their will. This sovereign power of the people is the safeguard of free institutions, and the bulwark of the freeman, and is a sure and sufficient guarantee against usurpation and oppression.

From what has been said, it follows that any measure presented to the consideration of congress, which owes its origin to the people, will receive just the attention which they demand that it shall. If the people approve it, the measure will become the law of the land. If it be disapproved, the measure will have a hard fight, with overwhelming odds against. Should it by some trick become law, it will not long survive, and disaster will fall upon the heads of those who have disregarded the will of the people.

To the last class of measures properly belongs the one now before the national congress providing for national aid for the improvement of the public roads. The bill itself is but the crystalized demand of the people for relief against an intolerable condition of affairs. Practical experience in the care and maintenance of the public roads, covering a period of more than a hundred years, has served to confirm in the minds of the people the views expressed by Washington, Jefferson and Adams, that the care and maintenance of the public road is a function properly and logically belonging to the general government. This conclusion would undoubtedly have been reached earlier except for the fact that until recently the attention of the people has been engrossed in the larger and more important development of the country. It was infinitely more important, in the first instance, to connect the widely-separated sections of our country by railroads and telegraph, so as to bring producer and consumer into quick communication. It was also of prime importance to develop our resources along all the lines necessary for meeting the needs of the people. These great primary needs have been largely supplied. Railroads form an almost perfect network of communication, and the resources of each section of our great country, which have been developed to an amazing degree, are now the common resources of all. This accomplished, it was a most natural thing that the people should turn

their attention to perfecting the details of our splendid civilization, and to harmonizing all its parts. The condition of the public roads was one of the first and most important problems that confronted this new era. Upon investigation, it was found that the item of dirt road transportation was entailing an appalling loss both to the producer and the consumer. A more serious consideration still was the growing discontent of the agricultural classes. The isolation of the farms and the burdens laid upon agriculture by poor means of communication was affecting seriously the character of our farmers. They were becoming discontented and restive. The young men of the farms were embracing the first opportunity to remove to the towns and cities, thus depleting the brain and youth so necessary to the successful carrying on of our agriculture.

These, and many other considerations, had the effect of arousing the people to a realization of the necessity of taking immediate steps to improve the roads, and after trying the plan of county and state aid, and finding it inadequate to accomplish the results desired, they turned to the national government for aid. It is not necessary to go over the arguments in favor of national aid. They are familiar to those who have followed this movement during the past few years.

It is enough to say that the measure now before congress is the direct demand of the people for relief against a condition of affairs which is in no sense imaginary, and this demand for national aid is fortified by unanswerable logic, and stern necessity.

The introduction of the bill in congress brought out, in the first instance, almost insuperable opposition. There were those who thought the plan paternalistic; others who declaimed the bankruptcy of the government should the measure pass, and still others, and these in the largest numbers, who took the position that, without considering other grounds, congress was without power to pass the bill.

The opposition from these sources was so strong that when I introduced my bill in the senate, it was freely predicted that its reference to the committee on agriculture and forestry was its death knell. Indeed, it would have been had the measure been less intimately connected with the direct needs of the masses of the people. Those in control of the machinery of legislation were opposed to the idea, and to escape personal responsibility would undoubtedly have preferred that the committee should be the tomb of the bill. But when the people became apprised of the fact that the movement had taken definite form, tremendous pressure was brought to bear to secure support for it from all parts of the country. I received many inquiries from senators and representatives concerning the nature of the bill, and for literature on the subject. So rapidly and effectively did the people come to the rescue that I was able to secure a favorable report from the senate committee before the end of the session. On account of the great pressure of public business during the last session, and the unusual demand for economy, it was impossible to press the measure to consideration. It will be introduced at the next session, and every effort will be made to pass it.

The practical question before the people now is the absolute necessity of organization and campaign work. As this is a measure springing from the people, so is it also one that can only pass when the voice of the people is plainly heard in its advocacy. If the measure is one of real necessity, and the people want the relief asked, all that is necessary to be done is to make that position plain to those intrusted with power. The fundamental question to be considered is whether or not national aid is necessary. If so, let the people continue to demand it, and ways and means will follow. The details of legislation, such as the amount to be given each state, the amount to be expended each year, and the method of expenditure, will work themselves out. There is ample power expressly conferred to pass the bill, but even if there were not express power, sufficient public sentiment will create a power by implication or otherwise. In fact, a general, and well-defined public sentiment can "remove mountains" of opposition in congress.

Without this co-operation of the people, nothing can be done, and the measure will fail, as it should. Relief is demanded in the name of the people, and if the demand is not backed by their strong active support, all the efforts of its friends will fail.

## Ready to Start

Motorist—"Are all the tools in the tool-chest?"

Valet—"Yes, sir."

"Are all the cushions and lap-robes in the tonneau?"

"Yes, sir."

"Is the tank full of gasolene?"

"Yes, sir."

"Have you brought down all our goggles?"

"Yes, sir."

"Well, run up to my room and bring down the roll of bills out of the top bureau drawer, so that we will have enough money to pay our fines. Then we shall be ready to start."—*American Grocer.*

AN INVITING STRIP OF ROAD, OVER WHICH THE PROPOSED RUN TO PIKE'S PEAK WILL BE MADE.

# Observations In A Garage

*From The Car*

A FAIR PUPIL

GOOD morning. So sorry I'm late—stupid train! They're always late, aren't they? Not going out? Shall I take my coat off? Thanks, so much. Have you got a pin? The floor's a bit dirty, isn't it? I'll just pin up my skirt—there, now I can move about.

"Is this the engine? Yes, I do want to know how it works. Oh! no, I don't know anything about it—begin right from the beginning, do. I'm such a stupid about things like this, I'm sure you'll be glad when you've finished with me. Dear me, and this is the engine. What do you call it? A what? Oh, piston! What a funny name! What are these little things all around it? Piston rings? Oh! I shall never remember all this. Let me see, that's an engine, and this is a—what is it? Oh, yes, a piston, and those are piston rings. Now, then, I know that. Piston, piston rings. Good! Now, what's the next—cylinder? and the piston goes up and down it? What does it do that for? Oh, I see. How clever you are to know all about it! How ever long did it take you to learn?

"Let me just go back a bit, will you? Let me see. Ah, yes, this is the piston, and these funny things the piston rings, and this is the cylinder, and it runs up and down the piston—No? Oh, of course, how stupid of me, the piston runs up and down the—er, oh, yes, the cylinder. I am getting on!

"By the way, shall we be going out next time? I do so want to drive. I wish you would, and then you could teach me all about the—er—insides of it afterwards. I think I shall like driving lessons much better. Should I wear brown boots—brown shoes? Oh, all right. You want to see my ankle working? Oh, then, I'll wear a much shorter skirt than this."

Somebody started an engine running just then, and I failed to hear the rest of this conversation.

THE GILDED YOUTH HAS JUST PURCHASED A MOTOR CAR

"Oh, that my receipt? Thanks awfully. I think I'll get off now.

"I say, don't I want a—what the deuce—one of those tooters, those pip-pip things, don'cherknow? I hear those Bobby Johnnies are fearfully down on us motorists just now.

"Is that extra? Well, then, put it on. That's where you have us. Where's the what-do-you-call-it-the-er-the thing you play about with when you want to go faster, you know? Oh, that my receipt? What's this for, eh? Oh, the horn! Is that what you call it? I knew it was something like that.

"No, I mean the pipe or something you push about—change-speed handle? This is it, eh? Now, where's the carburetter? This? Dear me. Hum. I thought the carburetter was the thing you pushed to and fro to alter the—oh, hang it—the, what the—oh, yes, the firing.

"I don't see the bally noise-box—yes, the silencer, as you call it. Has it got one? Oh, I'm so glad of that. I want to be quite up to date, don'cherknow."

He gets into the driver's seat, carrying his stick with him. As he climbs in, the stick makes a fascinating scratch along one of the highly japanned mud-guards. He finally, after an adjective or two of a highly explosive nature, puts the stick away behind him.

"Just start the works, will you?"

A man turns the handle.

"Why won't the beggar start? It isn't started, is it? Pull it round, man. Don't be afraid of a little exercise."

Whistles "Well may the keel row," as the man turns the handle.

"What's the matter now? Have you tickled the wretched-er-silencer?"

The mechanic, who has been vainly and perspiringly turning the handle, mutters something—fortunately under his breath. At last he obtains an explosion, and then the engine starts merrily enough.

"Look out, I'm going to start."

A great clash of gears is heard.

"Put my foot on the clutch? Well, am I not doing that? This is the brake pedal? Then why didn't you tell me so? Well, now, is that right?"

Another clash of gears, a bound from the car, and then sudden silence.

"Nonsense, it is in the lowest notch. The highest? Oh, yes, of course, how absurd—hurry of the moment. Just start the engine, will you, and I'll get off. What's

that? Do I think I can drive it? Why, yes, of course. Driven dozens. Not quite like this, you know. Thanks. Look out. Goodbye."

Telegram handed in a Post-office, Sharpcornah, two hours afterwards: "Car smashed. Send another same sort at once."

## Earnings of Motor Cabs

"It is undeniable that there is good money and plenty of it to be made in the motor cab business," says Motor World. "Naturally, through fear of competition, the officers of metropolitan companies operating such service are exceedingly close-mouthed when broached upon the subject of their earnings. If the seeker for information be persistent enough to ask the direct question, "Does the motor cab business pay well?" the official will invariably answer ten times out of ten, with a churlish shrug of his shoulders and a taciturn air, 'Well, I don't know that it's any of your business. If we are satisfied, it is all right.' So it is an impossibility to learn of the development of the business on this side.

"The statement just issued by the London Motor Cab Co., which controls most of the cabs in use on the English city's streets, may be used as a basis of comparison, although it must be taken into consideration that in London cab rates are just about half as much as in New York City.

"The London company states that from January 2 to March 12, this year, two cabs, running together 120 days, each earned an average of $1,180, or $9.83 per day for each cab. The company regards daily takings of $5 per cab as good profit. Several of the cabs at good stands make $250 per week. A horse driven cab does well if it collects $80 weekly. To make the cabbies lose not a moment, the London concern, instead of paying a regular scale of wages, gives them a percentage on every trip. This co-operative system naturally accelerates the service, and makes it much more profitable for the company as well as the driver."

## Seventy Miles An Hour In An Automobile

*A. H. Gleason in Country Life*

The racing chauffeur is the latest great adventurer. He ranks with the explorers and wanderers. His seekings are in the most intimate of the mysteries—speed. And he pays the price of his invasion. He is nerve-twitched, emotionally overplayed. As a tribe the great chauffeurs have the same facial expression of nervous strain and emotional wrack that belongs to "problem" actors and Negro evangelists. The racers are one in saying that road-racing is the highest expression of the automobile. There are five kinds of racing—track, 1,000-mile reliability, hill-climbing, road, and Florida. Florida is highly specialized. Track-racing is a contest of machinery where the speed-limit plugs are pulled out, and the motor is flung wild for a few minutes—a ton of metal running amuck in circles. Reliability racing is a kind of packhorse affair. There is a lack of victorious achievement in a machine hitting an Eagle Rock angle of 32 degrees. It is like a three-legged race.

There remains road-racing, where the machine meets normal but varying conditions, and where the chauffeur becomes a factor. The locomotive engineer can annex a few kilometers by opening his valve, but it is always done on a foreordained path, and in a direction that can't be violated. The racer enjoys all the pleasure of manipulating his rate of progress, but he can embroider his achievement by taking angular corners in lightning parabolas, by dodging dogs, and by melting past farm vehicles within ten inches of the left wheel, and never lifting the paint of the hub.

The chauffeur is the type, the symbol of the modern. The driver in action leans over the motor bonnet like an aimed arrow. His left hand is on the steel driving gear, his right hand opens and closes as he feels for the emergency brake that will save a life at the next blind corner, his feet, clad in buckskin shoes, are pliable and acutely sensitive, and play the clutch as if it were a soft pedal. His goggles throw off a steady fusillade of sand. His slave of the race, the mechanic at his left, is feeding oil to the friction-chafed chassis. The machine is throbbing as if it were a great heart, and the pulsations go through him as part of the system. The wheel tires get egg-shaped from the momentum. Chewing dust and blinking wind he feels the speed gathering from all parts, from the hub bolt to the inmost nut of the body, like a rising tide.

A PICTURESQUE STRIP OF ROAD ON THE CHELSEA-MANCHESTER, MICH., AUTOMOBILE BUS LINE.

# Speedways Demanded

## An Article by Emerson Brooks Favoring the Establishment of Such Tracks

*From New York Herald*

BECOMING more evident day by day is the need of speedways for the trials of both high and low powered automobiles under proper road conditions. The legal restrictions against road racing and even against the running of these machines at what every automobilist considers reasonable speed, have grown exceedingly severe. The demand on the part of makers for roads upon which they can test out their automobiles, not only for speed but also to determine what the strain of ordinary conditions will bring forth, is perfectly just and reasonable. Yet such conditions cannot be obtained; at least not at points where the tests will be of practical value.

I have heard—and I have reason to believe that my information is correct—that the main reason why Colonel Pope shipped the two International race entries, the Pope-Toledos, to the other side of the Atlantic for their preliminary trials was because there was absolutely no chance at any point near Toledo for the drivers to test the automobiles on the road without being subjected to the oppression of the constables and country justices. If this be true and, as stated, I believe it to be so, the situation revealed in a very annoying one for the American manufacturer.

But there are other reasons why a speedway is indispensable. Owners of fast road automobiles should be allowed to drive them at the high speed of which they are capable. There is no earthly reason why a man who has a fast automobile should be refused permission to try to get the best out of it which he can, provided he uses judgment in so doing. Of course, in densely settled districts, or where a driver has not the sense or the experience to avoid the imminence of accident, there is justice in stopping him. But on a clear road, in the hands of a driver who knows his business, an automobile is no more dangerous at fifty miles an hour than at fifteen. In some respects it is less so. The fallacy of depriving all drivers of all enjoyment of this kind, under all conditions, is apparent.

The American manufacturers are looking for a speedway, and I am sure from letters received by me that they would gladly support such a course. But there are many difficulties in the way. In the first place, it is an expensive proposition. This is the smallest difficulty, however, for the drivers of the country are now so aroused over the situation that they are ready to furnish the money.

But the really momentous obstacles are the natural ones. The country must be pleasant through which such a speedway runs, and the proper grades must be obtainable. In the case of the high-powered automobiles the best results have been obtained where there are grades of from ten to twenty per cent—I mean the best results for manufacturers. The only point where a high-powered automobile has the best of the low-powered one is on the grades. I think that has been proved in the history of straightaway racing at Ormond Beach and on the various tracks.

Therefore, a speedway, to be effective, must be placed in a country which has the grades and the other conditions necessary. These include accessibility both by roads and railways, and such a topography as to allow of proper observation from some central point as to what the automobiles are doing. I do not speak now of the spectacular side, though this must be considered. Such a speedway must be easily reached by visitors, for one of the principal sources of revenue must come from meetings held over the course.

I believe that such a speedway, situated somewhere near the great automobile manufacturing centers, would be a boon to the makers. At present they are compelled to send their machines to Florida to get knowledge of what they will do. This is expensive, cumbersome, and much time is lost. Nearly every manufacturer of prominence would use such a speedway as a testing ground.

## The A. A. A. Annual Tour

The Annual Tour of the American Automobile Association will this year take the form of a competitive run for the Charles

THE FAMOUS AUVERGNE COURSE ON WHICH THERY, THE FRENCH DRIVER WON THE JAMES GORDON-BENNETT CUP – JULY 5, 1905.

(1) *Summit of a hill near Rochefort.* (2) *The course one kilometre from the top of Noreno.* (3) *A bad corner near Bourg-Lastic.*
(4) *On Noreno hill.* (5) *Cross roads near Clermont-Ferrand.*

J. Glidden touring trophy, which Mr. Gilden formally offered last year at the conclusion of the highly successful inter-club run to the St. Louis Exposition. The Touring Committee of the Association, of which Augustus Post is chairman, has been at work during the winter and spring on the route and the various details.

The route selected embraces a chain of good roads running through a territory of beauty unsurpassed anywhere east of the Rocky Mountains. Starting from New York on the morning of Tuesday, July 11th, the first day's run is one of 121 miles to Hartford. On July 12th, the run is of about the same distance to Boston. The run of July 13th, Thursday, is a short one to Portsmouth, N. H., and on Friday the objective is Bretton Woods among the peaks of the White Mountains, where the annual "climb to the clouds" is held.

There the tourists rest for four days while the now historic hill-climb is held. An opportunity will be given for the participants to take part in the climb, if they wish, or to indulge in side-trips to whatever points interest them. The official itinerary calls for a start on the return trip on the morning of Wednesday, July 19th, the run for that day being one of 95 miles through the winding roads following the valleys of the famous mountains. The stop will be at Concord, N. H., and the run of July 20th, will be from that point to Worcester, Mass., about 90 miles. On Friday, July 21st, the course will be westward as far as Pittsfield, a distance of 109 miles. On Saturday, July 22nd, the closing day's run of the tour will carry the entrants to Poughkeepsie and thence down the east bank of the Hudson to New York city.

At the conclusion of the run the survivors will vote upon the selection of the car which has made the most consistent run, but while this vote will be taken into consideration, the award will be made by the Trophy Commission. All who finish will receive certificates from the association.

The tour will be under the direction of Chairman Post, of the Touring Committee, and Secretary Bachelder. With them will be associated A. B. Tucker and M. L. Downs, in charge of the immediate executive arrangements.

## Comparative Cost of Owning An Automobile and A Horse

A Washington, D. C., physician gives a comparison between the cost of an automobile and a horse that will be of interest to those who have often tried to figure the problem out for themselves and for others who are in doubt. For two years and a half this doctor has used a standard runabout and, from his experience he believes an auto a more profitable investment than a horse. Living in Washington where the streets are smooth his tire and repair bill, of course, was not exceptionally large. Another point that lessened the doctor's expense in keeping the machine is that he has it in a shed in the rear of his house. He spends fifteen minutes each morning, he says, looking it over and testing the mechanism and has never been left by the roadside. Only once was he towed in because of an insufficient supply of cylinder oil, but this time he took some one else's word for the quantity. He says one can never be sure if he takes the word of another and he always looks for himself now.

The physician says: "I have run the machine thirty-one months and in that time covered 14,932 miles, at a total expense of $524.46, or at the rate of .035 cents per mile for my riding." The doctor then gives the following table which shows the various expenses incurred:

RUNABOUT.

| | |
|---|---|
| First cost | $650.00 |
| Miles traveled in 31 months | 14,932 |
| Batteries, " " " | $15.00 |
| Repairs, " " " | $15.00 |
| Gasoline, " " " | $88.25 |
| Tires, " " " | $109.15 |

Depreciation in value in 31 months 2-3 first cost, or about $450.

COMPARISON WITH HORSE AND BUGGY.

| | Automobile. | Horse. |
|---|---|---|
| First cost | $650 | $325 |
| Cost of keeping for 31 months | 524.46 | 775 |
| Depreciation in value 2-3. | 450 | 215 |
| Number of miles traveled. | 14,932 | 9,000 |

"Thus it may be seen," says the doctor," "that after thirty-one months, if the auto and the horse and buggy were offered for sale, with their two-thirds depreciation, they would cost $975 and $990, respectively. I did not count the expense of a driver, but this would be about the same for either the auto or the rig. Therefore I am led to believe after two years and a half constant use—I have missed using the auto but thirty-two days in this time—that the automobile is to be preferred to the horse.

"If a person has to go in a hurry, or any distance, the auto beats the horse to a standstill. I have made enquiries among my doctor friends and find that a doctor can save from $3 to $5 a month on night calls by using the machine in place of going on the cars or paying cab fare."

# The How and Why of the Automobile

## A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from June issue*)*

**THE PISTON**—You recall that in one of the former chapters, we compared the piston of a gas engine to the bullet in a gun. The piston is essentially a projectile with its distance of travel limited to the stroke of the engine. Thus you can see that the first essential quality which it must have is that it may traverse the cylinder without an undue amount of friction, and yet at the same time fit the cylinder so perfectly as to allow practically none of the explosive gas to leak past into the crank case. This condition is practically impossible to attain with the piston alone, and consequently, gas engine designers found it necessary to equip the piston with flexible rings in order to meet this contingency.

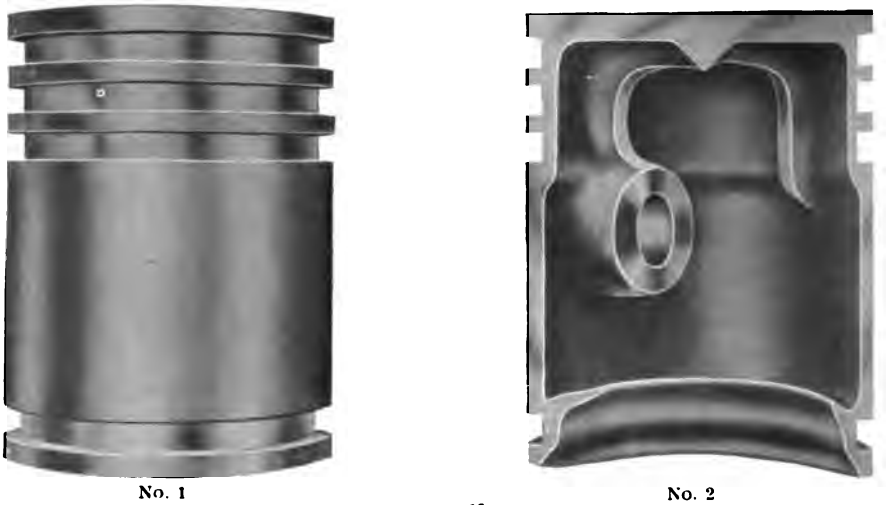
The piston itself is made of cast iron, for several reasons: Notably, first, because cast iron is very strong under compression; secondly, because

FIGURE 15

it is easily worked; and third, because it has good bearing qualities. These characteristics more than compensate for the slight additional weight as compared with steel. It is necessary for the piston to possess both strength and durability, for the reason that it not only acts as a piston, but also as a guide or "cross-head" as well.

Another point which must be taken into consideration in the design is the fact that the metal is subjected to an unequal expansion, the closed end next to the burning gas expanding more than the open end. Therefore, all pistons are tapered slightly, so that when this expansion takes place, the piston will assume a true cylindrical form. In addition to this, the central portion of the piston is turned to a smaller diameter, both to aid

* This valuable series began in the March issue, back numbers will be sent upon receipt of regular price



No. 1 No. 2

FIGURE 16

the lubrication and reduce the bearing surface, so that the friction on the side of the cylinder wall will not be excessive.

Figure 16 shows two views of a typical form of piston, No. 1 being a complete piston, and No. 2, a section showing arrangement of bosses and webs inside.

**PISTON PINS**—The piston pin is placed nearly in the center of the piston, in order to insure that the pressure transmitted by the connecting rod will be distributed uniformly on the bearing surface. It is a solid or hollow steel shaft, running directly across the piston and firmly fixed at both ends. There are various methods of fastening the piston pin, a few of the most common being shown in Figure 17. No. 1 shows a pin of

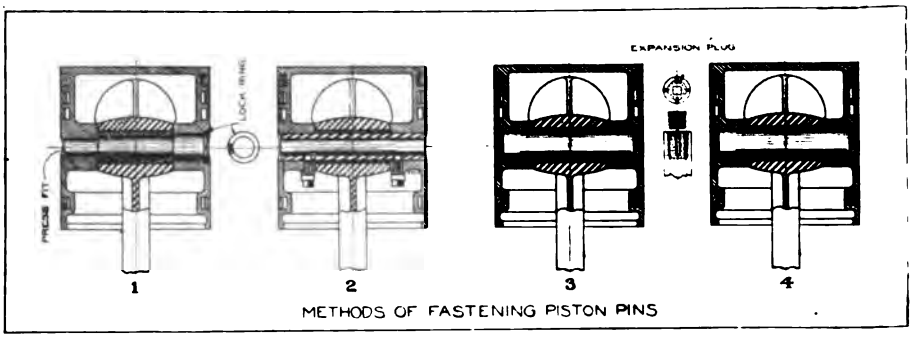



FIGURE 17

varying diameters, which is forced in from one side and held in place by a small ring sprung into a groove. No. 2 shows how the same result is obtained by the use of set screws. No. 3 illustrates the use of expanding plugs, and No. 4, an arrangement using a ring similar to the regular piston rings, whereby the pin is kept from sliding out of place.

**PISTON RINGS**—The piston rings are used, as mentioned above, for the purpose of securing a perfectly fitting moving joint. They are made of cast iron, turned eccentrically and sawed in two at the thinnest point. To insure an acurate fit, the rings are turned to a slightly larger diameter, and then cut so that when the ring is pressed together, its diameter will just equal that of the inside of the cylinder. Piston rings are not cast separately, but one large casting is made, from which several rings may be cut. This casting is placed in a lathe and turned down inside and outside to a slightly larger thickness than the thickest portion of the finished ring. The casting is then cut up into rings of the proper width. Another man then takes them in hand, and after sawing them in two in some such way as indicated in Fig. 18, places them in a jig, where they are turned eccentrically. As these rings are usually made in large quantities, they are generally left slightly larger than necessary, and later filed down to fit the

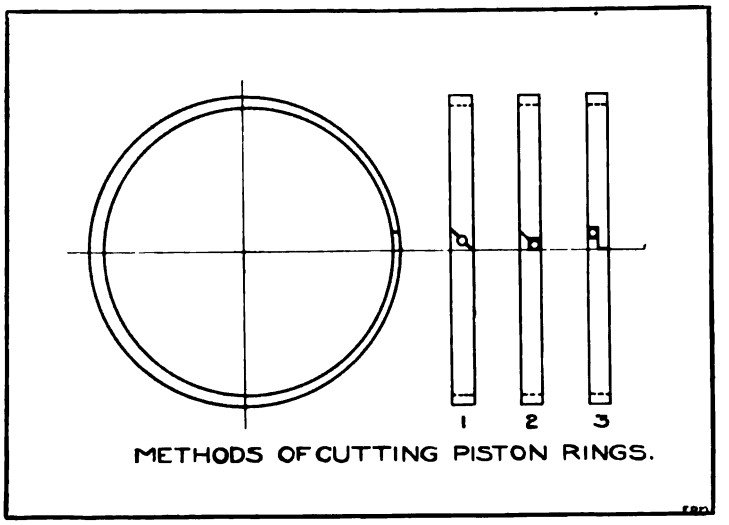



FIGURE 18

particular cylinder for which they are to be used. The operation of fitting rings is a very delicate one, and requires some skill to properly accomplish it. In order to insure that the rings shall be of the right width, they are placed upon the table of a piston ring grinder and carefully ground off to the desired size. When the rings have finally been finished in this manner, they are ready to be fitted over the piston, which has meanwhile been ground to fit the cylinder.

The location and forms of rings varies with the judgment of the designer, three rings at one end being deemed sufficient by some, others using four rings, three at the closed end and one at the open end of the piston. Still others satisfy themselves with three rings and two or three oil grooves.

**CONNECTING ROD**—The connecting rod, as the name indicates, is simply a connecting link between the piston and the crank shaft. It is made of drop forged steel or brass, and is of "I beam" section. The length depends upon the space available, but should never be shorter than twice

the length of the stroke. The longer the rod, the less side pressure will be produced on the cylinder wall, and consequently less wear and tear on the bearings. The piston end is generally fitted with a bronze bushing which is adjustable for wear, while the crank end bearing is either bronze or babbitt. Bronze bushings are harder to bore and require considerably more work to finish, and for that reason babbitt is more often used. In addition to this, any grit which might work its way between the crank and bearings would be buried in the babbitt before it had a chance to cut

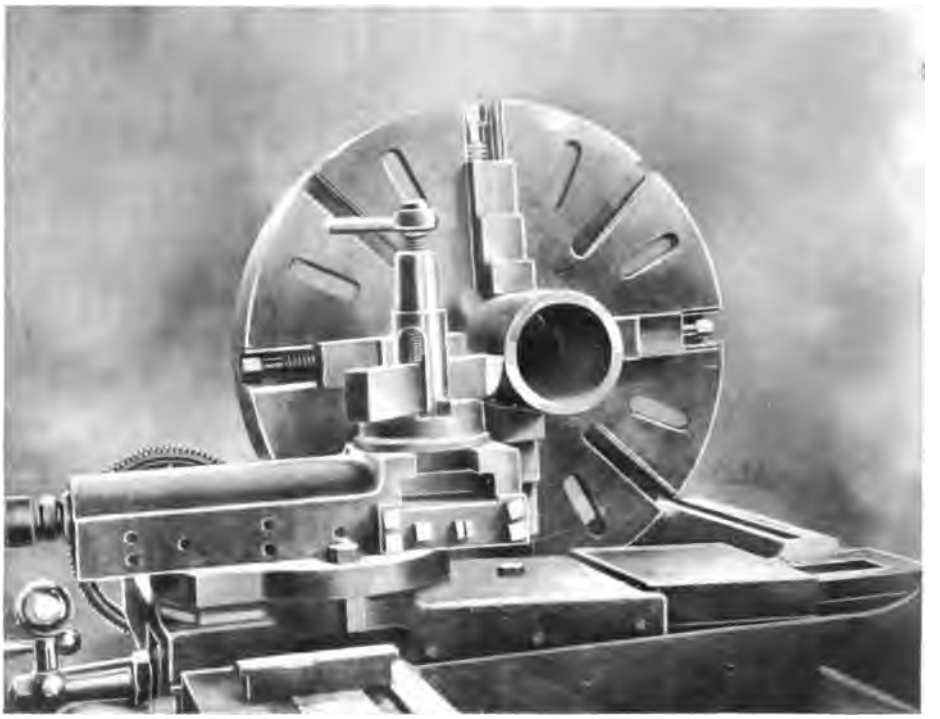


FIGURE 19—SHOWING METHOD OF MACHINING PISTON RINGS.

the shaft. Sometimes, as a compromise, a combination babbitt-bronze bearing is made, in which a certain portion of the bronze is cut out and filled with babbitt, thereby combining the desirable features of both. Figure 20 shows the various forms of connecting rods used in modern construction.

**LUBRICATION OF PISTON AND CONNECTING ROD**—The devices used for lubricating the connecting rod bearings are many and varied. The most common method used is that known as the "splash" system. The crank case is kept partially filled with oil, and the constant churning of this by the crank and counter weights produces an oily mist which very nicely lubricates both bearings. Other systems are employed, whereby oil or grease is forced through a hollow crank shaft and out into the bearings.

In a horizontal cylinder, such as that shown in Figure 21, you will note that an oil tube is screwed into the cylinder wall directly above a hole in the piston. The oil running down this pipe drops through the

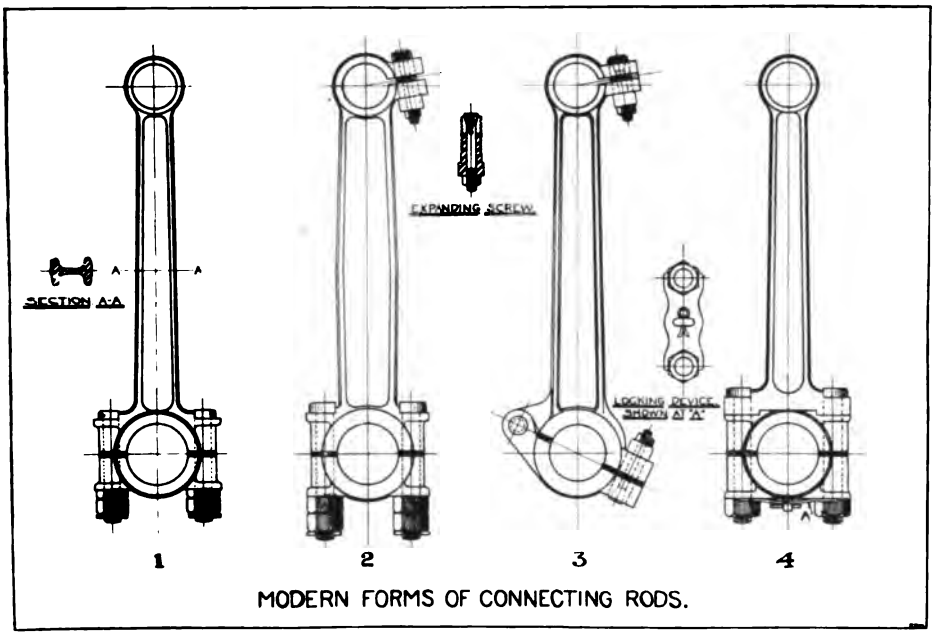



FIGURE 20

opening in the barrel of the piston and falls upon the wrist pin. Besides taking care of this bearing, it also helps replenish the supply in the crank case. The piston picks up enough oil to lubricate itself, being aided, of

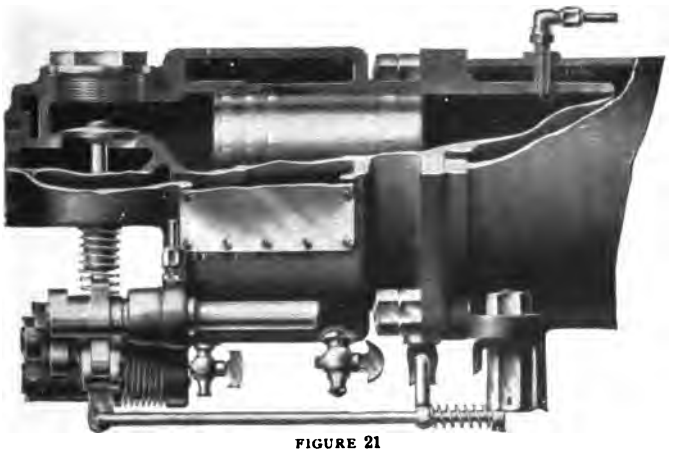


FIGURE 21

course, by the cuts in the rings, which help distribute the lubricant along the surface.

*(To be continued)*

## The Automobile 'Bus Era at Hand

In commenting on the rapid development of the automobile 'bus, *Automobile Topics* says editorially:

"After hanging fire for some time, seeming always to be on the verge of success, but never grasping it, that phase of automobile development represented by the building and operation of cars for 'bus or passenger lines has come into its own, and is flourishing like the green bay tree. All over the country a wave of confidence in these cars and lines is sweeping—a wave fairly comparable to the early stages of trolley line building, less than a score of years ago. Upon the efficiency and reliability of the vehicles used, and the keeping of operating costs within the proper limits, depends the future of such lines, and the tremendous extension that is certain to come in case of success. So far they seem, almost without exception, to be making good. Two causes tend to bring this about. First, the cars in use are vast improvements over those employed a few years ago, and much better able to stand up and give satisfactory service. Second, the expectations and requirements of the operating concerns are more reasonable than before. It is now better understood what cars will and will not do, and the promoters go into the venture with open eyes and with no extravagant visions of huge profits. Consequently, there is no unpleasant disillusion to follow.

"There are hundreds, perhaps thousands, of towns and villages where railroad and even trolley facilities are either entirely lacking or very imperfect. These form the field for automobile 'bus lines, and their exploitation on a scale of suitable magnitude is now at hand. The sole drawback is the inadequate supply of suitable vehicles. The demand is greater than the supply, and many promoters are held back by inability to obtain cars. That is a state of affairs that is in a fair way of being mended, however."

## The Doctor As An Autoist

"It would seem that of all classes in the community the medical profession could derive the most benefit from the automobile, but until recently the danger of a breakdown and the risk of having to come home ignominiously in tow has deterred the great majority of physicians from trusting themselves to any new-fangled contrivance," says a writer in one of the leading medical journals. "Although the good book says that 'the horse is a vain thing for safety,' yet by comparison with the early autos the faithful animal has seemed the embodiment of all virtues.

"Such improvements are going on continually, however, in the manufacture of motor vehicles of all kinds that more and more, especially in cities, the doctors are seen "bubbling" about, with great saving of time and expense. At first the auto, like the bicycle, was developed as a sport, and the keen competition thus produced, with the large sums which could be obtained for superior mechanisms were the principal factors in the evolution of the modern machine. At last, however, the minds of manufacturers are turned to producing an automobile which may not go as fast as some, but which will be sure to bring the owner home again without accident or delay. It is dawning on the minds of the trade that there are people who are not anxious to go at rates above what the law allows, and who want a strong, efficient, reliable machine, not for pleasure, but for business.

"It is time that such a machine were produced, if only for the 140,000 physicians in this country. It must be simple enough to render it unnecessary to keep a chauffeur, cheap enough to come in competition with the outfit of a good horse, a well-built buggy and a strong and well-made harness, that is somewhere from $600 to $800. It must be able to climb any hills, and strong enough and well-made enough to keep in repair. It must not freeze if left standing in winter, or if kept in a cold carriage house. It should be so made that it can have a hood for bad weather, and must have room for a receptacle in which instruments or other requisites can be carried.

"There are various machines now on the market which aim and fulfill these requirements; in fact, the choice is somewhat bewildering. It is something like employing a physician. If the patient survives he is glad that he made a good selection; otherwise * * !"

AT MAIN GATE OF ACROPOLIS

# With Rod and Gun In An Automobile

*By Hrolf Wisby, in Public Opinion*

IT is quite possible to spend your vacation in an automobile and make it a movable camp for the time being without much expense or any particular experience. But the real enjoyment comes in when you add to the pleasure of touring and camping those of rod and gun. There are experienced chauffeurs who sniff at the idea, and there are tourists who doubt, in good faith, if it is at all practicable. True, it is not to the taste of a man who is satisfied, after a day's run, with nothing less than a press-button for every craving of his lazy, pampered body. It is not for him whose soul rises no higher than his elevator carries him in his hotel. But to the lover of nature, to the natural man as he stands stripped of the artificial harness we call civilization, how to camp out in an automobile and go for game in the bargain, is not only a fascinating proposition, but one appealing strongly to his sense of independence.

Even if you don't own an automobile, such a trip as I shall outline is not beyond you, for a pretty good car can be had for from $60 to $100 a week, and this, divided among five persons, is not a prohibitive item, though the main one since, if you do not own special automobile apparel, old clothes can be pressed into service for such a trip.

Well, we are off. And let me tell you how I equipped. The car was the first thing, to my mind. The one I secured was a side-entrance touring car, combining remarkable ease of control, particularly through its new throttle pedal, and its tremendous hill-climbing efficiency, clean-cut, roomy body, and its 225-mile cruising range on one fill, with forty horse-power on hand for negotiating mileage at a fifty-eight-second clip.

What to wear was the next consideration. Rain and dust clothes were provided in common for all, and camping garments to suit individual taste. This year's new and popular long coat for men, made of natural chamois, and the short coat in black kid, is seen in the pictures as well as a new khaki model and a duster robe for women. Camping out in spring weather means that you must be prepared for almost any kind of weather, regardless of climate. To protect us when in camp and sleeping we procured two regulation army tents, each of which requires little more room than the blanket that goes with it. To guard against damp ground, two yards of table oilcloth were allowed per man and woman. The same oilcloth was exploited as a table-spread, as you will notice in one of the pictures.

There was the luncheon basket—the only object in the outfit that everybody wanted to handle and carry, if need be. It was a case of three knives and three forks for five persons, so there was some apparent reason for the anxious courtesy on this score. The question of camp cooking was also gone over. Women, I declared, had proven, through ages, their unfitness for cooking—could any first-class hotel remain first-class with a woman chef in the kitchen? I was voted out, however, by the two other men of the party, who agreed to risk their stomachs; and to my great satisfaction, the first day's cooking was notoriously bad. Yes, all excepting the coffee, which was sublime, owing probably to us men-animals having erected the fire-place. At any rate, one man, who is a celebrated coffee hater, drank three cups and would have drunk a pailful on a dare. The lady chef observed, with scientific mien, that it was the smoke from the dry branches and leaves that got into the coffee fumes and gave it that inexplicably delicious flavor. Another man, who is an architect, went to much pains in erecting an ornamental fireplace, the pride of the camp, which unfortunately is obscured in the picture by the ubiquitous luncheon basket.

As standard provision we carried five pounds of knackabrod (a kind of Swedish hard-tack made of pure rye), a patent seal jar for butter, a can of condensed cream, an assortment of spices, etc.; what other things might be needed we could pick up at our convenience. A little brook running across our way would yield trout in the early morning, we knew. A dozen of these little fellows, broiled over the architectural fireplace and creamed with real, fresh cream from the nearest farm, would be an ideal breakfast for all hands. And even if we might sometimes make the mistake of gunning after bear in a country where squirrels are the only wild animals, a single one of those clever little nest robbers, even at this season, would provide a pot-pie for the evening camp rather calculated to keep the outfit from starving. Wherever the game laws would permit and fowl abounded a few well-placed shots would supply all needs for a day or two, and on a pinch a tame hen from the nearest farm could be either lured into camp or unromantically

bought from its lord and master. Eggs, vegetables, and fruit in season—who should say that these were not within our reach?

Our complete equipment follows. We procured two regulation army tents for shelter, with four pegs and two short sticks for each, and an oilcloth flooring. There was a blanket, a towel, and a small toilet outfit for each person, and proper folding of outer-garments made a pillow for each head. The cooking utensils were reduced to the smallest possible parcel, and all eating gear and dishes were confined to the luncheon basket. Two shotguns, with ammunition, and two fishing rods with line and artificial bait, were listed as necessaries, for on our skill in using them would depend the contents of the camp menu. A good, strong hatchet was reserved for wood-chopping. There would be three camps a day, and three men would take turns providing both wood and water. The latter element was brought to camp in a collapsible bucket, which our experience taught us should not be trusted to stand on its own bottom lest it prove its collapsibility! No filter was needed. Nature had attended to that. There was an outfit of rubber boots for all hands, and this, with the addition to our rainy-weather automobile wardrobe, made us practically impervious to the showers of early spring, not only for touring, but for fishing. At the eleventh hour, two very interesting appurtenances were mercilessly voted out of the running—the portable telephone and the phonograph.

Still, I do not hesitate to recommend these instruments for a trip through wild and sparsely settled country. You may have been bored all day by miles of uninteresting wire-fences, but—one of the wires is a rural telephone exchange and your apparatus puts you in touch with humanity in a jiffy. There is comfort in that and sometimes there is safety. You may be set upon by highwaymen or robbers, or you may have a serious breakdown; in either case the wire is not amiss. And what about a cake-walk around the campfire, or a little brass-band music, furnished to order by the talking machine?

Of course, we carried the usual complement of tools for the car and devices for making wayside repairs. We had road maps, too, showing not only the route but the condition of the roads. We had little cause to use them, the chauffeur being a whole map in himself and appearing as well versed in the arteries of travel as any rabbit on the holes in its warren.

To those who contemplate a similar trip within the limits of New York state, I would suggest two rather interesting routes, the first of which the present party followed. Starting from Riverside Drive, New York, you follow the Hudson, making your first camp, as we did, in the neighborhood of Tarrytown. Speeding northwest through Putnam and Dutchess counties, you are liable to strike a fairly good camp site somewhere between Poughkeepsie and Rhinebeck before sundown. If you catch a fish or two in one of the creeks, or in the river, that is about all the game you can depend on there; but, of course, you can always manage to get chickens and eggs from the farmers, and this, with berries and vegetables, is not at all a bad camp fare, even if you have to wait with your shooting until you get beyond Catskill.

Try to gauge your touring so you will strike Albany at about noon, for here the routes fork out, one going northeast through the Lake Champlain regions, and the other pointing northwest toward the Thousand Island archipelago via Rome and Watertown. The best kept roads are along the latter route, which nevertheless is less preferable from a hunting and fishing viewpoint until you strike the western part of Jefferson county bordering on Lake Ontario. When you reach Rome by way of Schenectady, Johnstown, and Utica there is a good chance for a little side trip into the Lake Oneida country, where you will surely be kept busy gunning and fishing, and if you want to vary your route toward the Thousand Islands you can go via Syracuse and Oswego and follow the shore of the Ontario from Pulaski to Watertown and thence to Point View on the St. Lawrence.

Another very attractive trip affording good camping facilities can be made from Syracuse as a base, comprising a circuit of western New York, first in a southern direction, picking up Ithaca and Elmira, then to Little Valley and Lake Chautauqua, following the Erie shore road into Buffalo. You take in Niagara Falls, of course, and make Syracuse in a northeasterly arc, comprising Lockport, Albion, Canandaigua and Auburn.

## Among the Clubs

The Automobile Club, of Cedar Rapids, Ia., has thirty-five active members. The club held its annual election recently and elected the following officers: President, Glenn M. Averell; vice-president, Dr. W. J. Morrison; secretary, G. L. Rothrock; treasurer, J. L. Bever, Jr.; club captain, Dr. A. B. Poore.

The Minneapolis Automobile Club has elected the following officers: President, Col. Frank M. Joyce; vice-president, Asa Paine; secretary, R. G. Smith; treasurer, A. E. Paegel; trustees, E. J. Phelps, Dr. C. E. Dutton, Harry Pence, Horace Lowry and C. F. Haglin.

The Automobile Club of Philadelphia has removed to its new quarters in the building of the Manufacturers' Club, at 1409 Walnut street. The new quarters will be entirely adequate for the purposes of the club until such time as it shall be decided to rent or build a house having garage facilities. In its new quarters the club will be able to entertain large crowds at banquets, smokers and the like, and besides, will enjoy many of the conveniences which go with membership in the Manufacturers' Club, of which organization not a few A. C. of P. men are members.

At a recent meeting of resident automobilists, the Jamaica (L. I.) Automobile Club was formed, and the following officers elected: William T. Hale, president; P. G. James, vice-president; C. B. Crossman, secretary, and W. H. Furman, treasurer. The object of the club is the promotion of social intercourse and acquaintance among all owners of automobiles and others interested in same, the securing of legal rights and furthering the cause of good roads. A garage will be maintained, in charge of a competent repairman. The charter membership of the club numbers twenty-five persons, and the new organization starts life with every promise of success.

At its recent meeting, the Automobile Club of Terre Haute, Ind., elected the following officers: John S. Cox, president; Camille Urban, vice-president; Deming Wheeler, treasurer, and Isaac Torner, secretary.

The Canton (Ill.) Automobile Club has elected the following officers: President, T. C. Hays; vice-president, E. F. Swearingen; secretary, T. T. Smith. The board of directors comprises five members—C. E. Ingersoll, F. W. Matthieson, W. H. Smith and the president and secretary.

The Lincoln Automobile Club has been formed at Lincoln, Neb. Its officers are: President, George W. Holmes; vice-president, C. G. Crittenden; secretary, M. D. Eames, and treasurer, W. H. Dorgan.

The Automobile Club of Springfield, Ill., has elected the following officers: President, Garry Westenberger; secretary, Arthur Hughes; and treasurer, George Mueller.

The Aurora, Ill., club has elected the following: President, Dr. James Selkirk; vice-president, W. S. Ferris; secretary-treasurer, Dr. Edward J. Sill; assistant secretary, E. C. Pratt.

"THE PNEUS"—Is the interesting and attractive house organ of the Fiske Rubber Co., Chicopee Falls, Mass. The typographical appearance is attractive and it is edited from the standpoint of making it of interest to the rubber trade. The issue just received is Vol. 1, No. 2.

At the annual election of officers, held by the directors immediately following the general meeting of the Detroit Automobile Club, Edwin S. George, the well-known furrier, was elected president. Mr. George had been president for two months before the election, to fill out the unexpired term of Fred O. Paige, resigned. De Witt Loomis resigned as secretary at the same time that Mr. Paige resigned, and Harry Skillman was elected in his stead. Mr. Skillman was also re-elected. Mr. Paige was elected first vice-president, D. M. Ferry, Jr., was elected second vice-president, and L. H. Case, treasurer. Harry Skillman, D. M. Ferry, Jr., and Harry G. Hamilton, of Pontiac, were elected members of the board of directors for three years.

## Books Received

Under this heading will be noted from month to month any books or catalogues sent us which are worthy of special attention.

"AUTOMOBILE GOOD ROADS AND TOURS."—Compiled by the Hartford Rubber Co., of Hartford, Conn. Price $2.00. This is the most pretentious book of its kind which has yet appeared. It is handsomely bound in flexible leather covers and contains maps and much valuable information for the automobile tourist. It is, of course, impossible to describe more than a small portion of the hundreds of interesting trips which might be made in the territory covered by this book. No mere descriptions have been attempted. The aim has been, as the editor says, to compact all information and make necessary directions brief and concise. In a word, to place in the hands of motorists making any of the trips outlined such ready information as shall enable them to travel same with a minimum of inconvenience. The volume is an extremely useful one.

"SEVEN YEARS"—Is the name of the latest booklet issued by the Diamond Rubber Co., of Akron, O. It is a gem of neat, artistic printing and is devoted to the history of the company's development. It is well worth your while to send and get a copy.

"MENDENHALL'S GUIDE AND ROAD MAP OF NORTHWESTERN INDIANA."—C. S. Mendenhall, Cincinnati, O., publisher. Price $1.00. This is one of the latest of a series of valuable maps, especially adapted to the needs of the autoist.

"THE NEW ENGLAND AUTOMOBILE GUIDE BOOK."—The N. E. Guide Book Co., Boston, Mass., publishers, is of peculiar interest and value to New England autoists. It is nicely illustrated and contains a large amount of valuable information.

# MOTOR TALK

A Magazine of Outdoor Sport

PUBLISHED AT

DETROIT, MICH., U. S. A.

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## Editor's Talk

Interest in good roads has received more than ordinary impetus during the present season.

* * *

The National Good Roads Convention just closed at Portland was not only full of enthusiasm but full of promise of practical results as well.

* * *

The transcontinental automobile race has attracted the attention of the public to road conditions from one end of the country to the other.

* * *

From various states come encouraging reports of increased activity in road building.

* * *

Now is the time for a long pull, a strong pull and a pull all together.

* * *

In England a new organization is rapidly gaining members. It is called the Considerate Driving League. The spirit of the league is expressed in the following:

DRIVE SLOWLY

(1) Through towns and villages.
(2) When approaching cross roads, or turning corners.
(3) When passing schools, cottages and churches.
(4) On dusty or muddy roads when passing cyclists or pedestrians.
(5) When meeting or overtaking lady cyclists; and do not steer too close to them.
(6) When entering a main road from a side road.
(7) When you see a drunken man on the road.
(8) When passing any live animals on the road, cows, sheep, dogs, etc.

STOP

(1) When an accident of any kind occurs, whether your fault or not. Render all the assistance in your power, and, as a safeguard against future proceedings, ascertain the names and addresses of a few witnesses.
(2) When you see any likelihood of a horse becoming restive. If necessary, do this even before the driver holds up a warning hand.

ALWAYS ASSUME

(1) That other road users may do the wrong thing, i.e., a driver may pull the wrong rein, or a pedestrian hesitate and try several courses.
(2) That it is your business, not the other man's, to avoid danger.

The road is free for all; therefore be courteous and considerate, and *always drive like a gentleman.*

## Motor Talk Calendar

JULY

6-8, . . St. Paul, Minn.'; A. C. of St. Paul.
8, . . . Empire City Track, Yonkers, N. Y.
15, . . . Glidden Trophy Touring-Car Contest.
15, . . . Morris Park, N. Y.
22, . . . Empire City Track, Yonkers, N. Y.
29, . . . Morris Park, N. Y.
31, . . . Automobile Field Day, Lewis & Clark Centenial, Portland, Ore.

NOV 23 1905

# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

CONGRESSMAN WADSWORTH
OF NEW YORK

AUGUST 1905

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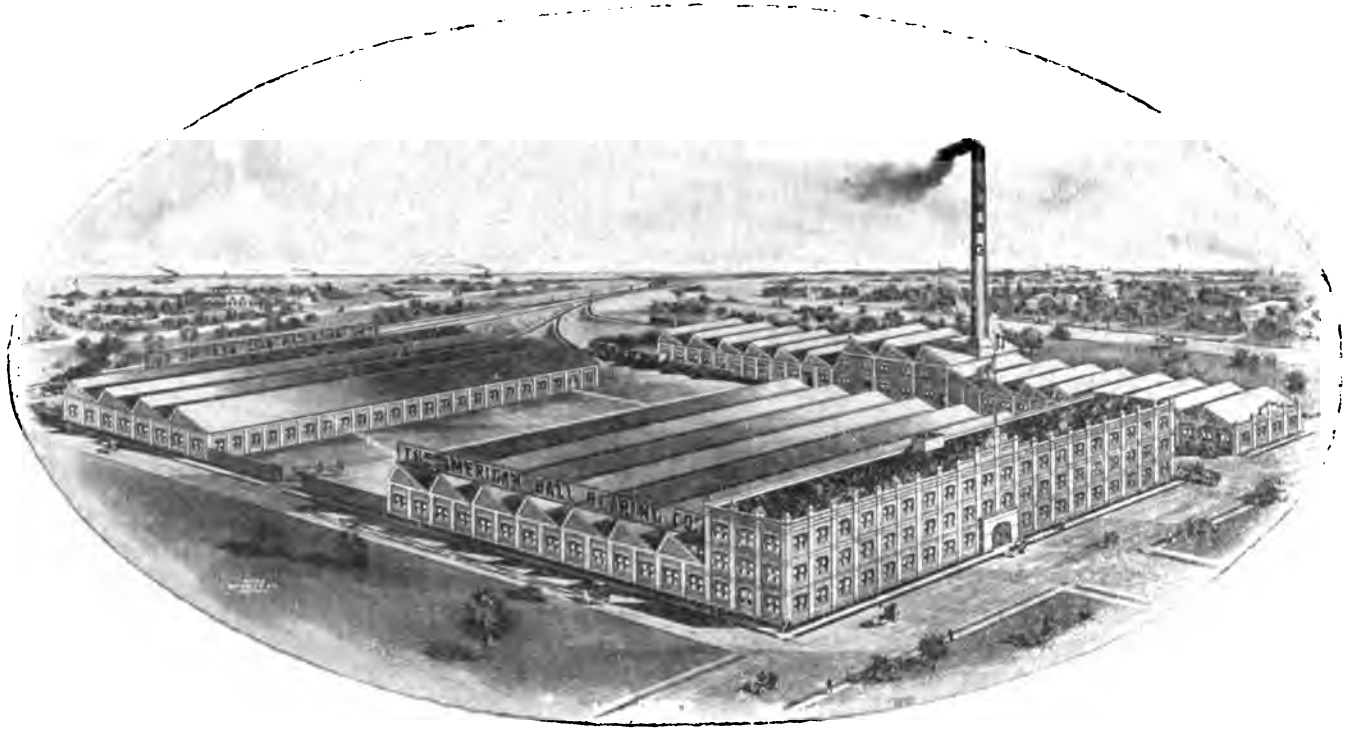

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# MOTOR TALK

A MAGAZINE OF OUTDOOR SPORT

VOL. I. AUGUST, 1905 No. 8


## Spreading the Gospel of Good Roads

### How the Apostle of the Split-Log Drag is Revolutionizing the Road Making of America, as told by D. Ward King

*Published, with illustrations, through courtesy of the Saturday Evening Post*

THERE is something startling in the statement that a drag made of a split log and costing only the price of a pocket-knife is the implement that is going to revolutionize the wagon roads of this country and save many millions of dollars to the rural population of the United States—yet I make this statement and put upon it all the emphasis of which I am capable.

"Downright absurd!" do you exclaim? I have had hundreds of farmers greet with jeers a less sweeping statement of the case—and then go home and prove to themselves its absolute correctness. Have you any idea of what it would mean to the people of the United States to change the bad wagon roads of the country into good roads? Such a revolution in transportation would climb so high into figures that the sum total would be absolutely startling and almost beyond comprehension. Not very long after I had made the first complete demonstration of the split-log method of road-making on my farm in Missouri, Col. G. W. Waters, Secretary of the Missouri Good Roads Association, said to me:

"If the road commissioners of the State of Missouri could stand here and see what I see, the result would be worth a hundred thousand dollars a year to this Commonwealth!"

It is impossible to express in figures even the most general estimate of the value of such a revolution in road-making as must result from the general use of this new and "absurdly simple" method. However, it is well to keep in mind the fact that in almost all States the mileage of common dirt roads is many times double that of macadamized or other expensive roads intended to be permanent.

In a state so long settled, so progressive and prosperous as Ohio, for example, more than fifty per cent. of the roads are of earth, and the interest shown by Massachusetts, Pennsylvania, New York and other Eastern States in the work of the split-log drag indicates that the dirt roads of these Commonwealths still constitute a very important and perplexing element in the problem of transportation by team. Fully ninety-nine per cent. of the highways of Missouri and Iowa are earth roads, and a State official of Iowa once said to me that to have fifteen per cent. of the main traveled roads of his State macadamized would be to realize the most ambitious dreams of those men of the State especially interested in improving the condition of its highways.

So much by way of suggesting the size of the problem which the split-log drag has come to solve. What has already been accomplished, so far as the spread of the movement is concerned, may be put in few words: It has been backed and pushed by the Missouri Board of Agriculture; one railroad, the Northwestern, has sent out a "Good Roads Special" for the purpose of evangelizing the farmers of its territory; other roads are eager to install the same kind of a broad-gauge, public-spirited campaign; thousands of miles of wagon roads have been permanently reclaimed from bad to good, and hundreds of meetings have been held in the nine States in which this gospel has been disseminated by means of practical demonstration. At these meetings thousands of persons have pledged themselves to make and to use a split-log drag; hundreds of newspapers have taken up this

movement, giving it generous space and a square deal; hundreds, if not thousands, of dollars have been raised and offered in prizes for the best miles or half-miles of drag roads, and most important of all, perhaps, the public sentiment of scores of communities has been stirred to self-respecting hopefulness and energy by this new gospel of "good roads without money."

Eight years ago I was devoting almost my entire time to my farm, three miles north from the little town of Maitland, Missouri. My interests demanded frequent travel over the road between my farmhouse and the village, and I always felt a keen resentment when bad roads made it difficult or impossible to drive to town—a state of things that was altogether too frequent.

A little investigation and experience demonstrated to me that this was by no means the result of indifference or inactivity on the part of our road commissioners. Then I reached the conviction that it was the fate of the farmer to spend $1,500 to $3,000 a mile for macadamized road or else travel in the mud in all periods of continued wet weather—which is to say a very large proportion of the year. This conviction is almost universal among farmers who have really wrestled with the road problem and know from experience its difficulties.

However, this state of doubt and discouragement did not long continue, and I began to investigate and experiment in an irregular sort of a way. Acting under this persistent impulse to experiment, I one day hitched my team to a drag made of a frost-spoiled wooden pump stock and an old oak post, held parallel to each other by three pieces of fence boards about three feet long. Smooth wire served in place of a chain, and a strip of plank laid between the post and the pump stock gave me a rough platform upon which to stand.

The horses were attached at such a point of the wire as to give the drag a slant of about forty-five degrees in the direction required to force the earth that it would gather from the side of the road up into the center. We had just had a soaking rain and the earth was in a plastic condition. I had driven this drag but a few rods when I was fully aware that it was serving at least the initial purpose for which it was intended—that of leveling down the wheel rut and pushing the surplus dirt into the center of the road.

At my neighbor's gate, toward town, I turned around and took the other side of the road back to my home. The result was simply astonishing. More rain fell upon this road, but it "ran off like water from a duck's back." From that time forward, after every rain or wet spell, I dragged the half-mile of the road covered by my original experiment.

At the end of three months the road was better than when it had been dragged for three weeks, and at the end of three years

A DEMONSTRATION IN FRONT OF SECRETARY SHAW'S HOUSE.

it was immensely improved over its condition at the end of the first year's work. I studied the result of each step in my experiment and finally learned that three elements are required to make a perfect earth road and that the lack of any one of them is fatal to the result. To be perfect an earth road must be at one and the same time oval, hard and smooth. All of these indispensables are acquired by the use of the split-log drag in any soil that I have ever come in contact with—and I have worked in the various kinds of clay soil, in the gumbo of the swampy lowlands and in the black mud of the prairies.

Observation of my experiment taught me that two weeks of rain would not put this bit of road in bad condition at a time when the highway at either end of it was impassable for a wagon. Of course, it was plain that the reason the road was not bad was that there was no mud in it. But why mud would not collect in it was not clear to me until I was taught my lesson by the very humble means of the hog wallow. One day I chanced to notice that water was standing in one of these wallows long after the ground all about it had become dry. Probably I had many times before observed this fact, but not until now had it occurred to me to inquire into its cause. Examining the edges of the wallow, I was impressed with the fact that it was almost as hard as a piece of earthenware. Clearly this was because the wallowing of the hogs had mixed or "puddled" the earth and the water together, forming a kind of cement which dried into a hard and practically waterproof surface.

The next important lesson in my understanding of the real elements of road-making was taught me by studying what we farmers call "a spouty spot" in the side of a clay hill. All who live in a clay country know the unspeakable stickiness of one of these spouty places, and are familiar with the fact that, after ten days or two weeks of bright, hot sunshine, you can take an axe and break from one of these spots a clod so hard that with it you can almost drive a ten-penny nail into a pine plank. Naturally, it occurred to me that, if this puddled clay soil would stay hard for three months when left in a rough condition, it would surely stay longer if moulded into the form of a smooth roof, so that the water which fell upon it would easily run off.

This original half-mile of road was dragged steadily for four years before I had a single active recruit in my new crusade. At first my neighbors poked good-natured fun at me, probably because the thing was so new and so absurdly simple—and, perhaps, also, because I did the work without pay or any expectation of it. Road-making in the country, it may be well to explain, is not generally followed as a fashionable philanthropy or a popular diversion.

Gradually, however, this little stretch of dragged road began to force itself upon the attention of the community. From one source and another I began to hear of the observations which it provoked—and some of them were quite as amusing as they were agreeable. One day a physician of a neighboring town told me this story:

"I was driving down your way the other night to see a patient. As usual, when I have anything on my mind, my eyes were fixed on the dashboard of the buggy, and I was deep in study over an especially perplexing case. You know how rough all the roads have been, lately—to ride over them is simply to be jolted from one side of the buggy to the other unless you let your horse go at a walk, which a physician cannot always do. Well, I was rattling and threshing along over the clods at a trot, when suddenly I straightened up, aroused by the impression that something had gone wrong with the running-gear of the buggy. But the trouble was with the road! I had simply struck your little stretch of dragged road, and the buggy skimmed over it as smoothly as a sleigh runs over packed snow."

That incident was decidely agreeable to me, but not more so than the one that came to my ears a little earlier when I chanced to hear the experience of Mr. H. W. Montgomery, a banker of Skidmore, a town four miles north of my place. With his wife he was one night driving down to a little gathering at Maitland. The night was decidedly dark and it was impossible for him to see more than the general outline of the road over which he was driving. Suddenly the lurching of the buggy ceased and the banker startled his wife with the abruptness of his exclamation: "What's happened to this road? There has been something doing here! I'm coming back in the daytime to see what has been going on." He had struck the half-mile of dragged road, and, being a highway commissioner and interested in the public roads, he had at once sensed the change.

Of those early recognitions none gave me greater pleasure than to receive a letter from Congressman David A. De Armond saying: "I can determine almost to an inch where the drag began." And later in the note he referred to a certain strip of road which had "experienced the magic influence of the drag."

If there is a means of studying human nature more interesting than that of trying to teach a community a new method of road-making, I have yet to find it. As I

have said, for four years I dragged a strip of road from my front gate to that of my neighbor. He had always been a good neighbor, having the best interests of the community at heart, but he was not easily enticed out of settled opinions or into new ways of doing things, and, consequently, I refrained from saying anything to him on the subject of road-making; relying entirely upon the evidence presented to his own senses to awaken his interest in putting the road between his house and the next neighbor on the way toward town in the same condition as the road between his house and mine.

Finally, however, he made himself a drag, and started to push forward the good work. From others I knew that he had been a doubter at the outset, but within two weeks he was a dragged-road enthusiast and came to me in a state of considerable excitement, not to say indignation, because the neighbor next beyond him was not willing at once to take up the work and begin the dragging of the road on toward the village. When my neighbor voiced his impatience and intimated that something ought to be done to push the thing right straight through without delay, I simply shook my head and asked the question:

"Do you know how long I have been dragging the road up to your gate?"

"Why, I guess it must be about four years," said he.

"Yes," I answered, "and all that time I haven't said a word to you urging you to take up the work. Now the same thing that convinced you will convince the neighbor beyond you. We'll just let him take his time to come to the conclusion that he can't afford to travel over a bad road to town when a few minutes' work will give him a good one over which to ride." Later experience showed me that this matter of road-dragging is contagious and catches best where the work itself is left to spread the conviction of its own soundness. As one neighbor after another fell into line, and the stretch of dragged road continued to lengthen, the public comment about it increased until the road authorities from neighboring townships and counties began to investigate the matter, with the result that local farmers' institutes asked me to speak at their sessions and give a personal demonstration of the workings of the split-log drag.

There are a few bugaboos that have to be met wherever this new gospel is introduced. One of these is capillary attraction. This force is declared by "scientific experts" to be the thing that will draw the water up into the dragged road and make it soft. The only answer to this is, simply, that it doesn't.

FRONT VIEW OF SPLIT-LOG DRAG.

Another popular bugaboo is the calamity that will surely swallow up the dragged road 'when the bottom falls out in the spring." Again, the answer is that the bottom does not fall out of the road that has been dragged with a split-log, because the dragged road, unlike the other kind, does not put down a lot of mud into cold storage with the coming of the first deep freeze. The thing that plays hob with roads is mud —and mud is earth and water mixed. I never realized how it is that wagon-wheels can cut down so deep into an ordinary road until I had a certain experience with a lightning-rod man. I drew the contract myself, and knowing that the rod should be grounded in soil that would always be in a moist condition, I specified that the rod must be sunk at least eight feet into the ground.

When the workmen came to put up the rod the foreman asked for a "bucket of water, a dipper and a spade." I could see where there would be plenty of exercise for the spade, but the other things puzzled me. With the spade the man took out just enough earth to get down under the crust. Then he took hold of a length of rod and jammed the end down in the center of the hole he had made with his spade. It didn't sink more than three or four inches. I was just about concluding that the man was an ignoramus for trying to sink the rod that way, when he took it out and poured a dipperful of water into the little hole.

Again he inserted the end of the rod and began to chug it down. The way it sank through the moistened soil made my eyes open. A little more water and a little more chugging and in a few minutes he had put that rod down eight feet into the earth without removing more than half a shovelful of dirt. Then it came to me—that's digging by mixing a little water with dirt.

and it's precisely what a wagon-wheel does to a muddy road—a road where the water can stand until something comes along to mix it with the earth; while, on the other hand, the dragged road uses a coat of mud—to all practical purposes a cement—to make an oval roof that will not let the water stand.

At one of our meetings in Nebraska a road commissioner came to me very much troubled about a stretch of gumbo highway under his supervision. "I suppose," said he, "that, if you had this road to take care of, as soon as you saw a hollow place in it you would go and get dirt and fill it in?"

"No," I replied, "I would fill it in before there was any hollow place there."

Apparently this statement was a little beyond his grasp, and so I tried to think of some illustration by which I could make it entirely clear to him. Just at that moment I happened to notice that he had a head of thick, wavy hair. This gave me the inspiration I needed, and I said:

"How often do you comb your hair?"

"Why, three times a day, of course," he answered, flushing slightly.

Then I came back at him with the question:

"Why don't you wait until there are tangles, or at least indications of tangles, in it before you begin to drag it with a comb? That's precisely the plan upon which traditional road-making is conducted. You have been in the habit of waiting until the tangles were there, and, consequently, you had to use a much heavier implement, with the result that you moved a great deal more—earth!"

Everywhere the rallying-cry of this movement is: *"From your own front gate to your neighbor's front gate toward town."* Thus, the thing always starts with the farmer's own self-interest, but leads him directly beyond his own line-fence to the place where he finds himself working for the general good of the community. There are three considerations that are especially powerful in getting men interested in this movement: Keeping the roads in condition so that school and church privileges may be enjoyed; keeping the boys in touch with a certain amount of social life, so that they will not wish to leave the farm, and keeping the roads passable for work and heavy hauling, so that good markets may be taken advantage of and work done at a time when it will count most and be accomplished at a minimum of time, toil and expense.

BEFORE AND AFTER

REAR VIEW OF SPLIT-LOG DRAG.

From the outset of this work so many questions have poured in upon me, indicating points concerning which the public is prone to go astray in its understanding of how to build and use the split-log drag that I have prepared the following road-dragging "catechism" as covering, with fair completeness, the main working facts in the problem:

Would it not be better to plow the road before dragging?

No. Plowing gives a soft foundation. Plowing the middle of the road is a relic of the old dump-scraper days.

What do you do when there are deep ruts in the road?

Drag them. If you drag when the sur-

face is quite loose and soft, you will be surprised how soon the ruts disappear.

How do you get the dirt to the middle of the road?

By hauling the drag slantwise with the end that is toward the center of the road a little to the rear of the other end.

But suppose the road is too narrow?

First drag the wheel tracks. After three or four rains or wet spells, plow a shallow furrow just outside the dragged part. Spread this over the road with a drag. Only plow one furrow. You may plow another furrow after the next rain. At each plowing you widen the roadbed two feet.

How many horses do you use?

Two, generally; three if it is just as handy; four when breaking colts—a good solid team in the center and a colt on each side; two men on the drag—one to drive, the other to control the colts.

How do you drain the road?

If the earth is pushed in the middle of the road continually the road will drain itself.

Why not make the drag out of plank?

You can, and do good work. But the split log is best. The plank drag is not so stiff.

Why not make the drag of heavy sawed timber?

Because drags so made have a tendency to slip over the bumps.

Don't you grade up the road first?

No. The grading is done with the drag, gradually. By so doing, the road is solid all the time and is built on a solid foundation.

What does it cost to drag a mile of road a year?

The cost is variously estimated at from one to three dollars.

How do you keep the drag from dodging around sidewise?

By not loading it too heavily. If a drag dodges around the earth you are moving, it is because it is overloaded.

Will the dragged road stand heavy hauling?

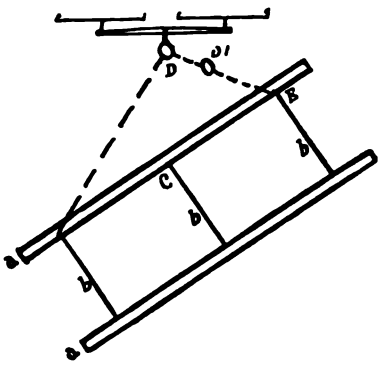
Yes and no. A dragged road will stand more heavy hauling than an undragged road, but not so much as a macadamized or well-kept gravel road.

Will a drag help a sand road?

A sand road is a very different proposition from the black soil, clay or gumbo. An entirely different method must be adopted. Three things may be done to a sand road to make it better: First, keep it wet; second, haul clay on to it; third, sprinkle it with crude oil, as they do in California and in some parts of Southern Kansas and Texas. The drag will be beneficial in keeping the sand road perfectly flat, so that it will absorb moisture and retain it a long time.

To this catechism I would add the following "Don'ts:" Don't drive too fast. Don't walk; get on the drag and ride. Don't be particular about material; almost any log will do. Don't try to drag with only one piece; use two.

Following is a diagram of the drag with an explanation:




In this diagram *a, a,* are the two halves of a split log nine feet long, ten to twelve inches thick, set on edge, thirty inches apart, both flat sides to the front; *b, b,* strong oak or hedge bars, the ends of which are wedged in two-inch auger-holes bored through the slabs; dotted line, chains or strong wire. *D, DI,* are rings to connect double-tree clevis. Hitch at *D* and stand at *C,* on a plank laid on the cross-bars, for ordinary work; or hitch at *DI* and stand at *E* for ditch-cleaning or to make the drag throw more dirt to the left. To move dirt to the right reverse the position of driver and hitch. If working a clay or gumbo road put iron, old wagon-tire, or something of the sort, on lower edge of drag at end of six months; for softer soil at the end of twelve months.

THE FERRY—SNAKE RIVER, ORE.

THE TRANSCONTINENTAL RACE—HUSS AND WIGLE INTERVIEWED BY JAMES W. ABBOTT, THE GOOD ROADS MAN, IN IDAHO.

# Registration of Automobiles

## The Arguments in Favor of One Registration Valid in Any State

*From Outing*

OWNERS and manufacturers of automobiles have settled back in their seats on the question of speed legislation. Some take the position that the continued making of speed laws, amending, repealing and finally redraughting them, will ultimately result in reacting upon the entire question with so much force as to abolish the laws forever.

Others say, "Leave well enough alone," feeling that the speed limit as it is now fixed in different cities in America is comfortable if not fast. Both factions are sanguine that at a time not remote the speed ordinance proposition will resolve itself into the same laws that govern Holland—every driver's judgment is the speed ordinance.

A question of far greater import also on the subject of legislation is being agitated through the efforts of the Automobile Club of America and the National Automobile Association; to-wit, a reciprocal act between States whereby each recognizes the automobile registration of every other; as, for instance, do New York, Connecticut, Rhode Island and Massachusetts. Although Massachusetts and Rhode Island now have bills before their respective legislatures affecting interstate registration, there seems small, if any, prospect of their adoption.

The object of a registration number displayed upon the rear running gear is for identification only in case of violation of laws or ordinances, that the names of the offenders, whose numbers correspond, may

OFFICIAL BAGGAGE WAGON OF THE GLIDDEN TROPHY TOUR—THE START FROM NEW YORK.

PRIZE WINNER IN THE SPRINGFIELD ANTIQUE AND HORRIBLE PARADE, JULY 4TH.

always be obtained from the Secretary of the State. For an automobile to display the registration numbers from a dozen States only destroys the original intent of the law, by virtually making it impossible for any one to distinguish the number should he be called on quickly to do so. Whereas, with only one number in sight, no confusion results, and letters would cease to be sent to the secretary of one State accusing a driver of carelessness or negligence when the number belongs to the registration of another State.

While the constitutionality of obligatory registration is not accepted by the Law Committee of the Automobile Club of America they conceded that point because, at the time of its enactment, the automobile and the general public had a remarkable antipathy toward one another, and even now automobilists make no objection to registering their cars. They only raise the question of citizens' rights and complain that prejudice on the part of the State lawmakers continually places obstacles in the path of automobilists when they should be allowed to run about the country with the same privilege and protection as has the horse and carriage driver, who goes from State to State with no thought of registration; or the yachtsman who runs out of Bar Harbor into New York Harbor with never a question whether he is registered in Maine or New York so long as it be one or the other. But the same yachtsman who has an automobile on board and hankers for a spin in the city in whose harbor he has dropped anchor, must write the Secretary of State before he may run his automobile on the pier, even though he has a license in his home State.

A further instance of the inconvenience of the non-adoption of the reciprocity clause may be found in the case of a prominent automobilist in Brunswick, Maine. He decided rather suddenly to run down to Washington for the inauguration. About the time he was ready to start he learned he would have to register in six States, one license covering Massachusetts, Connecticut and New York. The registration fees ranged from one to three dollars, and the time required by secretaries of States was from two days to two weeks, and all to run through States that he probably would not enter again for several years. Such an

experience seems manifestly unjust when the simple remedy of non-resident registration would obviate the necessity of such inconvenience. This particular instance came under the writer's notice, and doubtless is only one of scores of such cases.

There seems but one course open to automobilists to secure the legislation they need and should have, and that is for the Automobile Club of America and the National Automobile Association to urge their members in different States to give up for the time being all the smaller and less important automobile problems, and combine their efforts in influencing the legislatures in their respective States to concede them this cardinal point—the axis around which other automobile questions revolve—interstate registration reciprocity.

To further complicate matters for automobilists Arkansas, California, Colorado, Georgia, Florida, Indiana, Idaho, Louisiana, Michigan, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North and South Carolina, North and South Dakota, Oregon, Texas, Utah, Washington, West Virginia, Wisconsin and Wyoming have no State laws affecting automobiles. Automobilists should not conclude that because of this fact they can make merry therein with a sense of freedom from restriction; such States have the most annoying local ordinances which are posted on lamp-posts and trees in inconspicuous places, and which are not published in such a manner as to be available until one is called to account for some innocent violation. Therefore the only way to keep out of trouble in an unknown community is to exercise judgment and caution.

## Cost of Rural Transportation

The roads of the country are the avenues of the prosperity of the whole country. They are to a large body of the people the connecting link between them and civilization. They are of vital importance. The present condition should be a source of mortification to the nation. Nearly every other civilized nation has taken hold of the question and established magnificent systems of roads. It was only when the general government took hold of the matter that the roads of foreign countries were made permanent. We are languishing in the mud still. The cost of rural transportation is double in this country as compared to Canada, England or Europe. While we have outstripped the earth in nearly every other direction, we are in this respect on a par with Asia and Africa, and the semi-civilized nations of Europe. As a matter of national pride this question should appeal to the consideration of every patriotic citizen.

ON THE TRANSCONTINENTAL RACE—THE POST MISTRESS AT MARTIN, IDAHO.
A LIVE COW BOY ON THE RIGHT.

SCENE NEAR MORRISTOWN, N J, ONE OF THE MOST DELIGHTFUL TOURING SPOTS IN THE WORLD.

# The Song of the Engine

## An Appreciation by Louis Vincent

*From The Car*

WHERE is the poet who will sing of the throbbing, pulsating voice of the engine? Singing in a thousand keys its song of power, now soft and cooing like the whisper of a siren—

There is sweet music here that softer falls
Than petals from blown roses on the grass
Or night dews on still waters between walls
Of shadowy granite in a gleaming pass—

or bold and masterful like the full throated voice of a viking lord and master of turbulent foaming seas.

It is a song of power it sings, a song of life and movement, a song of deep seas when the sky is black and moonless, of wailing winds and walls of water and the dark sea line; or tremulously like the pattering of summer rain in a rose garden, or sweet, low western winds sighing across sun-steeped meadows, and it sounds in responsive unison with one's whole being.

The traveler by rail on the long monotonous lines of steel cannot realize the sense of bridging distance. The mechanism of the process of transit and the cut-and-dried time-table atmosphere kill any such feeling. One becomes part of a bloodless system of regulated movement—a unit without any individual existence.

The motorist can rejoice in a feeling of absolute mastery and independence. He is his own engineer and stationmaster, and he laughs at the tyranny of time-tables. He learns the real romance of the road. The broad road and the strong road become to him as the sea to the mariner. They rush to meet him, and wind out like the ribbon of a tape machine. He realizes the infinity of space, the essence of the power that carries him along with the strong vibrating movement of the engine. Here the heart and nerves of the car lie.

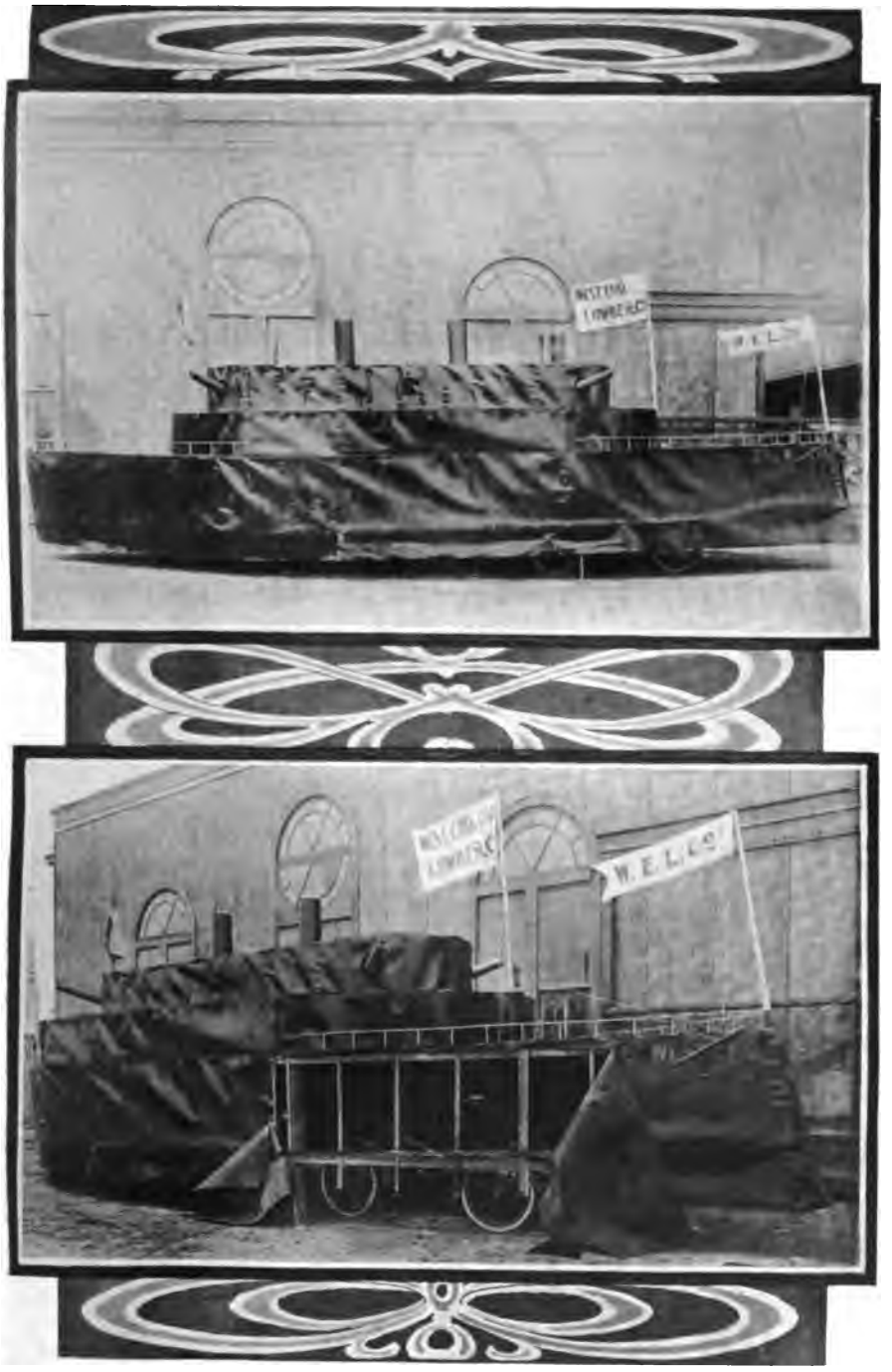
If he is his own driver the pleasure is multiplied. By the strength of men's hands and brains this wood and steel have become a thing of life. Every part sings individually, and together, harmoniously, the song of propelling power. Each screw and rivet trembles with the dominating energy which impels the car on and on like a sensitive living thing. Skimming the road like an ice yacht or a ship on a sea of glass, or bounding along straining the leash which controls its destinies, it goes panting forward in a perfect whirlwind of force.

Sometimes it is a drowsy hum like the rythmic murmur of bees on a summer's day, or a snorting, growling bass note, but always it is music. What a theme for a composer, what scope for musical interpretation as a tone poem. Henley has sung of the glorious sense of power, but without that elusive subtlety which is the very quintessence of real poetry, and Kipling has written, but only in discords, when he might have transposed the sounds into rough-hewn music. Some day he may do for the motor-car what he has done for the liner and the marine engine, giving voice to every part.

## The Automobile in a New Role

Automobiles have been accused of many things good and bad, says a writer in *Leslie's Weekly;* the latest theory is that they make big family hotels fail. Charles A. Gerlach, who built the first large family hotel in this city, and has recently been called in as "manager" by a receiver who represents an insurance company, declares that the automobile has been taking away many patrons. He says:

"All these hotels were built with the idea of catering to a well-to-do or wealthy class, and apartments were held at large rentals. With the development of the automobile as a means of transportation, however, the conditions have changed. Men of wealth find that they can live in the country thirty and forty miles removed from the city, and yet reach their homes in an hour or so. That accounts for the increased number of country homes, and the diminution of the receipts of a class of hotels which were built with the idea of giving accommodations to a class which is able to own high-power automobiles. To many the automobile presents great conveniences. It is al-



NOVEL AUTOMOBILE FLOAT—ILLUSTRATING ITS CONSTRUCTION.

ways ready, or can be summoned at a few minutes' notice. Formerly the man of wealth had to accommodate his movements to the schedules of the railroads. Now he can get a vehicle which can make a speed equal to that of many trains on short notice. As soon as business will permit, he can get into his automobile and be hurried home. I have been surprised recently to see what a large number of automobiles are in use. They crowd the ferry-boats going to the New Jersey side. It is no unusual thing for a man who does business in New York to live in places as remote as Lakewood, going there in his automobile almost as quickly as he could by train and making his own schedule."

## Automobile vs. Horse and Wagon

"Just wherein and how much an automobile is superior to a horse-drawn vehicle is the first question an interested person asks," says an interesting writer in the Country Calendar. "Usually, his very legitimate curiosity is only partially satisfied. The automobile is so new, the different types and makes differ so greatly, the methods of drivers are so wide apart, and the results attained by them so surprisingly diverse, that the difficulty of returning a direct reply or of demonstrating by figures and simple facts the various points of superiority is greatly enhanced. Yet each year the difficulty decreases. At the present time, it may be said, without fear of contradiction, that a car can be run at an operating expense of from two to three cents per mile per passenger, while the maintenance charge—repairs, replacements, etc., is an almost negligeable quantity if the mileage of the car does not greatly exceed that of a horse-drawn vehicle. But its mileage always does exceed it, for the reason that the automobile, going so much faster and easier, as it does, runs up its mileage to an astonishing figure almost before it is realized. Add to this that a modern and properly constructed and cared-for automobile is, or can be, always in commission, ready to go anywhere at a moment's notice,—and its steadily growing popularity is easily accounted for.

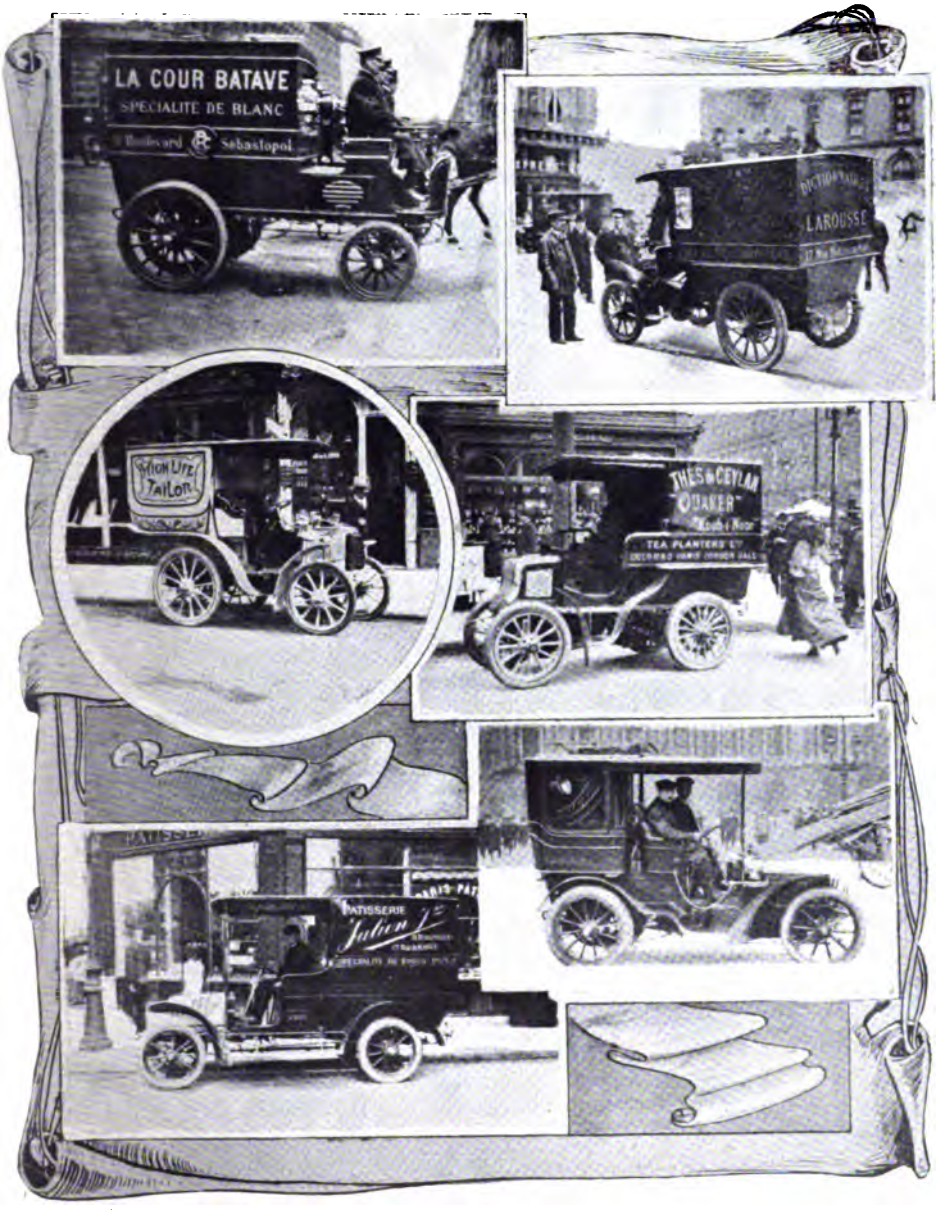
FRENCH AUTOMOBILE PLOW.

AUTOMOBILE PLOW IN OPERATION.

"The manifold improvements in mechanism, design and general equipment, which are introduced each year, make us wonder to what degree of perfection the automobile will finally be bought. Compare in your mind's eye the luxurious touring-car which whirled past your door this morning with the curious 'horseless carriage' which crawled by seven or eight years ago, and you will have an idea of the progress in automobile construction in the past decade, which manufacturers tell us will be more than equaled in the next."

## Coachmen as Chauffeurs

It has been found that good coachmen, if not too old or too much opposed to the introduction of an automobile, make very capable and satisfactory chauffeurs. Especially is this true in the case of electric vehicles. In New York City, the ranks of drivers of private and public broughams, coupes, cabs, etc., are recruited almost entirely from coachmen, whom the steadily growing use of self-propelled vehicles is forcing from their former vocation. For gasoline and steam automobiles, ex-coachmen have not been drawn on to an equal extent, although no inconsiderable number of owners have preferred to have their coachmen trained to drive the new cars. Their familiarity with the habits and customs of their employers is a strong recommendation, and, if they are willing to study the mechanism of the vehicles given into their charge, there is little reason why they should not prove satisfactory. Of course, some mechanical aptitude is necessary if the best results are to be obtained.




**FRENCH COMMERCIAL VEHICLES.**

**Snap shots taken at random on the streets of Paris, showing typical examples of the Light Cars employed by business houses of the French capitol in delivery service.**

# The How and Why of the Automobile

## A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from July issue*)*

## THE CRANK CASE

USE OF CRANK CASE.—The crank case of the motor generally serves four purposes. First, it acts as a foundation for the engine. You will notice in Fig. 22 that webs are cast on the sides of the case, and so shaped that they may be bolted to the frame. This type of construction is used for multiple cylinder motors, and all crank cases are built in very much the same way, differing only in slight details. In horizontal motors, however, we use a different form of construction, supporting the engine not only by means of the crank case, but by the cylinder as well. In the case of the single cylinder

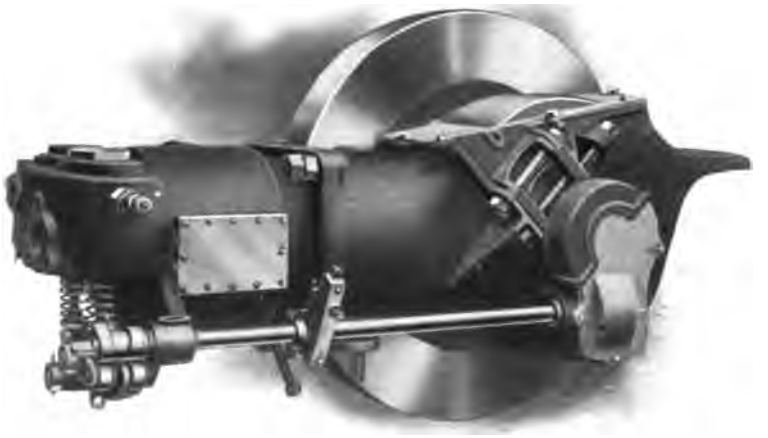


FIGURE 23

horizontal motor, shown in Fig. 23, you will notice that the arrangement is such that one cross brace of the frame passes under the end of the crank case, while another is bolted to the under part of the cylinder. The method of supporting the two cylinder opposed type is very much the same except that in general the crank case alone is bolted down. In many cases a tubular form of construction is used whereby the motor is supported by means of steel tubes running through the sides of the crank case.

Second: The crank case also supports the main bearings, large bosses being provided at each point where bearing is desired. You will note by referring to the figures that these are strengthened by means of webs run-

* This valuable series began in the March issue, back numbers will be sent upon receipt of regular price.

ning out from the crank case walls. Very often the castings are "cored out" so that cavities are formed in the upper part of these bosses in such a position that oil thrown up by the crank is allowed to drain down into the bearings, thus giving a very good and easy method of lubrication.

FIGURE 22

FOUR-CYLINDER CRANK CASE

Third: The crank case furnishes an air tight compartment in which the crank may revolve, thereby insuring that no dust or abrasive substance can reach the crank pin and wrist pin bearings. When the "splash system"

FIGURE 25

TWO VIEWS OF A SIX-CYLINDER CRANK CASE

FIGURE 26

of lubrication is used, the crank case furnishes a receptacle for the oil. In order to prevent the oil from flowing down to one end when the machine is on a grade, thus starving some of the bearings, small webs are raised in the lower half, or "oil pan," as it is called, thereby always allowing a certain amount of oil to be retained under each cylinder.

Fourth: The pressure created in an air-tight crank case is many times utilized for forcing gasoline into the carburetor, or oil through a lubricating system.

**THE TWO-STROKE CYCLE CRANK CASE.**—In addition to these uses, the crank case of the two-stroke cycle motor is used as a compression chamber, and therefore differs slightly in form from that of the four-stroke cycle motor. It is made air-tight, and its volume is so figured that it will be as small as possible and yet have walls clear the connecting rod. Often this volume is decreased by inserting blocks of wood or aluminum or cast-iron crank discs. In many of the smaller motors two small fly-wheels are keyed to the shaft inside the crank case chamber, the object being, of course, to reduce the crank case volume, thereby obtaining a large initial compression pressure. During the last year or two many of the automobile manufacturers have been experimenting with two-stroke cycle motors, and have produced crank cases of relatively very small volume.

**THE CRANK SHAFT.**—The main shaft, or crank shaft, as it is commonly called, is perhaps the most important part of the engine for the reason that it is the part which changes the reciprocating motion of the piston to the rotary motion of the fly wheel. It must be built strong enough to

FIGURE 27—SINGLE-CYLINDER CRANK SHAFT

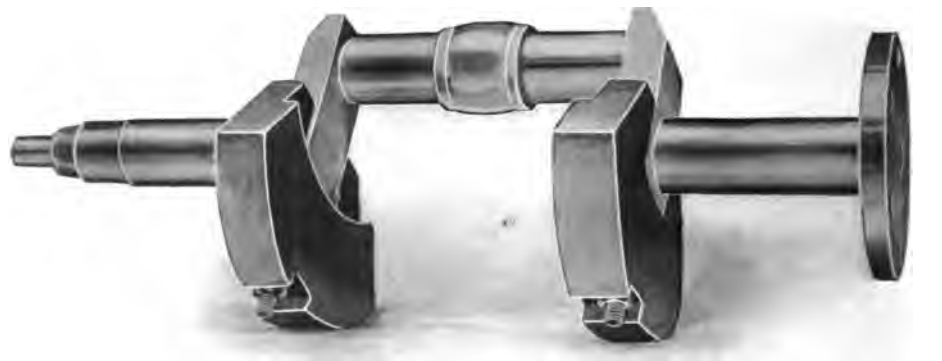


FIGURE 28—TWO-CYLINDER CRANK SHAFT, CRANKS ON SAME THROW

withstand forces in both of these directions, and consequently its design is a matter for careful consideration. While it is very easy to design a crank shaft large enough to transmit a given power, yet at the same time every increase in diameter means an increase in the size of bearing, size of crank case, and hence size of engine. Therefore, in order to keep down the weight per brake horse power developed, engineers are careful to figure

sizes very closely. Special steels are used which will stand greater stresses, thus enabling the crank shaft to be made smaller. Where crank shafts are

FIGURE 29—TWO-CYLINDER CRANK SHAFT, CRANK AT 180°

made in great number, drop forged shafts are made, and afterwards turned down to size. After these are within a few thousandths of an inch of the required diameter, they are carefully ground to fit the bearings for which

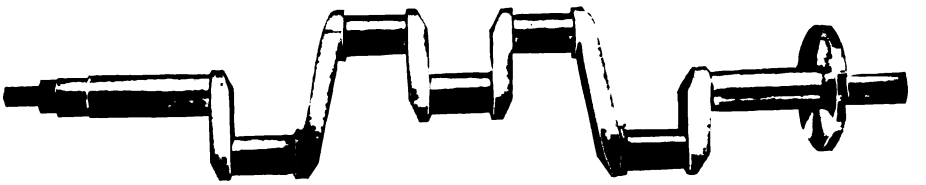


FIGURE 30 FOUR-CYLINDER CRANK SHAFT

they are intended. Thus the cost of manufacture is very much reduced.

Formerly all crank shafts had to be forged out by hand, or cut out of a solid block of steel. This, of course, meant several days of work, and in the end it is doubtful whether they were very much better than a good drop forged shaft of today. When extreme hardness is desired, crank shafts are case hardened, that is, they are imbedded in some carbonaceous substance, such as bone dust, and allowed to bake until a portion of this carbon has entered the surface of the steel. The great difficulty in this sort of treatment is that the heat is very apt to warp the shaft, and great care has to be taken in order to prevent this, so that not many of the manufacturers attempt this process. There are several special treatments which are used, many of which give very excellent results.

Regarding the form of the shaft, crank arms, and crank pin, a glance at the photographs will indicate the types used in modern practice.

**RELATIVE CRANK POSITIONS.—SINGLE CYLINDER CRANK SHAFTS.**—In order to explain the various settings of cranks in multiple cylinders and motors, the writer has drawn the diagrams shown in Fig. 32. You will note that, first each cylinder, piston, connecting rod, and crank shaft is shown diagrammatically. Next, the relative positions of the cranks are indicated in the small circle to the right. Then, in order to study the relation of the working strokes, circles have been drawn, one revolution of which represents a complete cycle of a four-stroke engine. In other words, each quarter of the diagram is supposed to represent one stroke of the motor. Therefore, supposing that we start with a working stroke represented by the black portion, you will notice that this stroke ends at the first quarter mark. Then the exhaust stroke occurs during the remaining half, the suction stroke begins at that point, and continues until the three-

quarter mark is reached. Similarly, the exhaust is represented by the fourth quarter. Thus the conditions in the single cylinder engine are very easily pictured.

**TWO CYLINDER CRANK SHAFTS.**—Passing now from the single cylinder, let us take up the type of motor where two cylinders, set side by side, or twin cylinders, as they are usually termed, are used. If we start at the working stroke in cylinder No. 1, and assume that the cranks are set on the same throw, the inside circle will represent the sequence of conditions in this cylinder. Likewise, the outside circle will indicate how

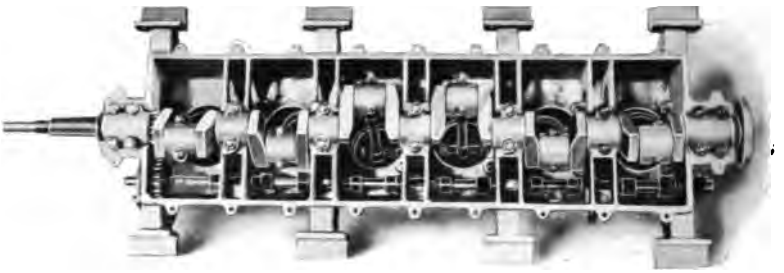


FIGURE 31
SIX-CYLINDER CRANK SHAFT

the same conditions occur in cylinder No. 2, and resulting diagram shows very plainly that the working stroke in cylinder No. 1 comes in a different revolution from cylinder No. 2, or, in other words, the explosions are balanced. This type of motor, however, requires that four counter-weights be used on the crank shaft in order to balance the crank pins, connecting rods, and pistons.

With this in mind, let us take up the next type, where the cranks, instead of being set together, are 180 degrees apart. Here you have slightly different conditions. You will notice that instead of the explosion coming in different revolutions they here fall in the same. Therefore, during one revolution the engine receives no impulse. On the other hand, the cranks are balanced, or nearly so, at least, as far as the turning effect is concerned. However, there is a bending moment produced which tends to rock the engine. This is partially overcome in some motors by the introduction of two counter weights, one opposite the extreme right crank arm, the other opposite the extreme left. Thus, you see, that although everything is done to secure a perfect balance, yet neither of these two types of double cylinder engines can be balanced perfectly either explosively or mechanically. The two cylinder engine which combines balanced parts and balanced explosions is known as the double opposed. The cranks are set at 180 degrees, and you will notice in the diagram that as both pistons go down at the same time, alternate explosions follow each other at one revolution intervals.

**THREE AND SIX CYLINDER CRANK SHAFTS.**—Up to this point, these diagrams have undoubtedly been clear, but for the three cylinder and six cylinder motors, the problem becomes slightly harder. It is necessary to divide the diagram now into twelve parts instead of four, as the cranks are set at 120 degrees instead of together, or at 180 degrees. However, the same general principle applies, and if you will carefully study the diagram, the operations will undoubtedly be made clear.

(*To be continued*)

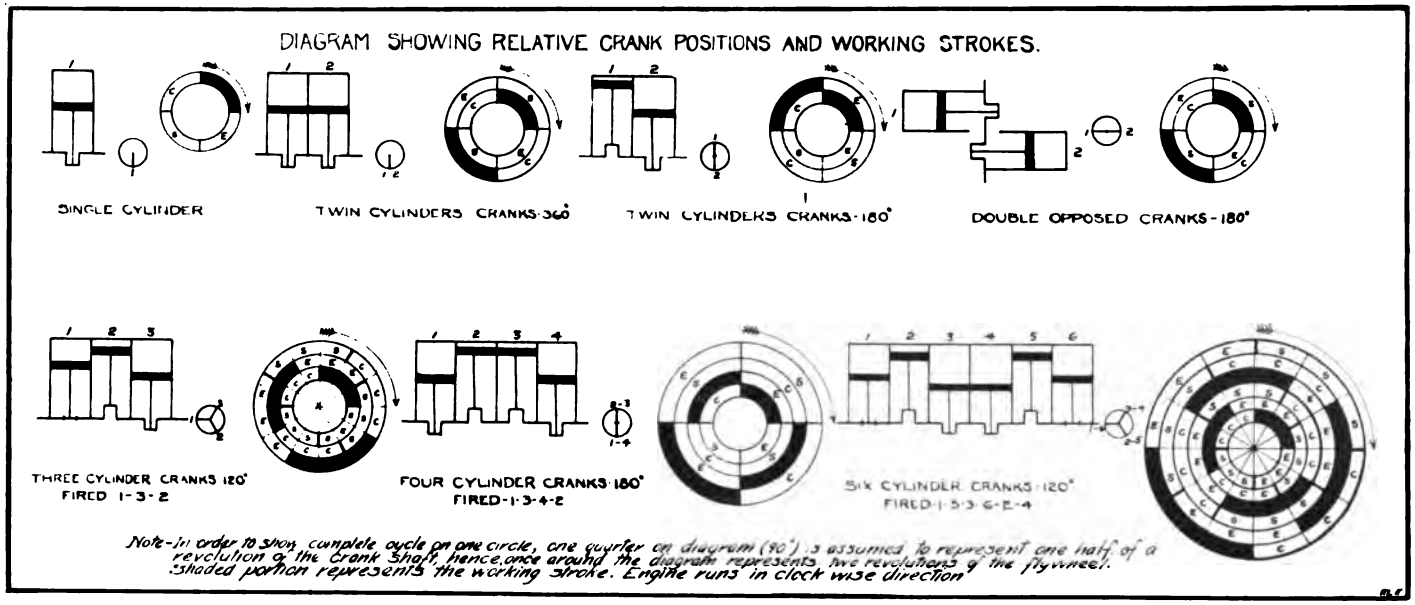


DIAGRAM SHOWING RELATIVE CRANK POSITIONS AND WORKING STROKES.
SINGLE CYLINDER
TWIN CYLINDERS CRANKS-360°
TWIN CYLINDERS CRANKS-180°
DOUBLE OPPOSED CRANKS-180°
THREE CYLINDER CRANKS 120°
FIRED 1-3-2
FOUR CYLINDER CRANKS-180°
FIRED-1-3-4-2
SIX CYLINDER CRANKS-120°
FIRED-1-5-3-6-2-4
Note-In order to show complete cycle on one circle, one quarter on diagram (90°) is assumed to represent one half of a revolution of the Crank Shaft, hence, once around the diagram represents two revolutions of the flywheel.
Shaded portion represents the working stroke. Engine runs in clock wise direction

FIGURE 32

In all of these diagrams, the inside circle represents cylinder No. 1, the next one outside, cylinder No. 2, and so on. The letters S, C and E mean respectively suction, compression, and exhaust; the working stroke being represented by the shaded portion. Another interesting feature of these diagrams is the fact that they show the proper method of firing each motor. A great aid in working any problem of this sort is to make a model of the engine out of cardboard, and mark positions of pistons and crank pins.

# MOTOR TALK

A Magazine of Outdoor Sport

PUBLISHED AT
DETROIT, MICH., U. S. A.

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## Among the Clubs

The Automobile Club of Philadelphia has joined forces with the local police authorities in an effort to break up scorching on South Broad street. Several recent accidents have aroused quite an anti-automobile sentiment in that section, and the club has placed four cars at the service of the department of public safety and are patrolling the thoroughfare after nightfall, when the scorchers seem to be particularly active.

The Rochester Automobile Club has elected the following officers: President, H. S. Woodworth; vice-president and attorney, John A. Barhite; treasurer, C. F. Garfield; secretary, Frederick H. Clum. Board of Governors: F. H. Bettys, George G. Foster, Griff D. Palmer, F. E. Mason, Lee Richmond, A. J. Rockwood, Harry G. Strong, John W. Bingeman and Austin F. Crittenden. All of the governors except the last four were re-elected. The present membership of the club is 159, a gain of 126 in the year.

The permanent organization of the Cape May Automobile Club has been effected by the election of State Sentaor Lewis M. Cresse, of Cape May County, as president, and A. H. Chadbourne, of Philadelphia, as vice-president. J. A. Depew was elected treasurer and J. Hiscock secretary. The board of governors is composed of Mayor Thomas W. Millett, of Cape May; J. N. Wilkins, Jr., J. A. Depew, President Isaac Starr, Jr., of the A. C. of P.; Charles J. Swain, J. Fred Betz, 3d, Lawrence McCormick, F. M. Johnson and Courtland D. Cramp.

The Grand Rapids Automobile Club has re-elected the following officers for the ensuing year: President, Dr. Perry Schurtz; vice-president, A. A. Barber; secretary, Lyman W. Welch, and treasurer, N. Fred Avery.

The Blue Grass Automobile Club of Lexington, Ky., has been formed, and the following officers elected: J. T. Tunis, president; Roger Smith, vice-president, and T. B. Dewhurst, secretary. The club carries on its charter list the majority of the machine owners of the city.

At a recent meeting the Kansas City Automobile Club elected the following officers for the ensuing year: H. N. Strait, president; G. L. Henderson, first vice-president; C. V. Purcell, second vice-president; H. G. Blakeley, secretary-treasurer; C. F. Ettwein, B. E. Nace, E. M. Hetherington, F. C. Merrill, J. E. Bernheimer, D. F. Piazzek, Ferd. Heim, H. C. Fowler and H. W. Jacques, directors.

The Springfield, O., Automobile Club is being organized. Among those who have agreed to become members are Dr. L. E. Russell, Dr. C. W. Russell, C. C. Bramwell, Ben Johnson, Dr. King Gotwald, R. C. Worthington, Harry Downey, H. E. Rice, George Mentel and Charles Jones. The new club will fight oppressive legislation.

It is the intention of the Lincoln, Neb., Automobile Club to promote a number of race meets and club runs this summer. The club is now thoroughly organized and has 100 members to start with. George W. Holmes has been made president, C. G. Crittenden vice-president, M. D. Eames secretary and W. H. Dorgan treasurer.

Each of the runners in the Marathon race which the New Illinois Athletic Club of Chicago will promote on September 23, will be accompanied by an automobile, the Chicago Automobile Club having agreed to furnish the necessary cars for the big event. When the Marathon was run in connection with the Olympian games at St. Louis last year automobiles were found to be of great assistance in conveying the race officials and checking the contestants.

## Motor Talk Calendar

### AUGUST

1-2, . . Grand Rapids, Mich.
4-5, . . Detroit, Mich.; Automobile Club of Detroit.
11-12, . . Cleveland, O.; Cleveland A. C.
15-Oct. 15, W. K Vanderbilt, Jr., Cup Race.
18-19, . . Buffalo, N. Y.; Buffalo, A. C.

### SEPTEMBER

4, . . . Boston, Mass.; Massachusetts A. C.
9, . . . Providence, R. I.; R. I. A. C.
23, . . . Morris Park, N. Y.
29, . . . Poughkeepsie, N. Y.
30, . . . Empire City Track, Yonkers, N. Y.

**WE ARE NOW SUPPLYING THE SAFEST, MOST COMFORTABLE, AND THOROUGHLY PRACTICAL TIRE MADE IN THE WHOLE WORLD**

**Their High-Grade Quality—"FISK" Quality—Insures Durability. Their Construction is a Positive Guarantee against Accident**

**"FISK TIRES MAKE SATISFIED BUYERS"**

**FISK RUBBER CO., Chicopee Falls, Mass.**

**FISK BRANCH HOUSES**

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SPRINGFIELD, 40 Dwight St.
NEW YORK, 754-756 Seventh Ave.
PHILADELPHIA, 828 Arch St.
ATLANTA, 108 N. Pryor St.
SYRACUSE, 423 So. Clinton St.
BUFFALO, 893 Main St.
CLEVELAND, 318 Euclid Ave.
DETROIT, 262 Jefferson Ave.
CHICAGO, 1251 Michigan Ave.
ST. LOUIS, 3908 Olive St.
KANSAS CITY, 1330 Main St.
MINNEAPOLIS, 704 Hennepin Ave.
DENVER, 1534 Glenarm St.
SAN FRANCISCO, 114 Second St.
LOS ANGELES, 1084 So. Main St.

# Regarding the Boys' Oldsmobile Contest

**BOYS:**

We had no idea how many of you would respond when we issued the first announcement of our Prize Offers.

Requests for "A Message to Boys" have poured in so fast that we have had to keep several people busy attending to them.

Requests come from every state and territory in the union, and the enthusiasm is not confined to any particular locality.

The business-like character of the letters has justified our belief in your enterprise and your ability to fully earn the prizes we offer.

It would do your fathers good to read these letters. Some bubble with enthusiasm. Some go into lengthly statements of the local situation, giving lists of prospects and other data which in almost every case is of decided value. Others are brief requests for the desired information. All are business like.

## YOUR CHANCE AS GOOD AS THE NEXT ONE

While there are a large number of entries there is no reason for *you* to feel discouraged or doubtful of your ability to win a prize. Even if you do not secure the first prize your efforts will be suitably rewarded. You won't be wasting your time.

On July 13 one boy wrote us entering the contest. On July 15 he wrote us announcing his first sale, that of a curved dash runabout.

When we wrote "A Message to Boys," we thought we had answered fully all the questions likely to arise, so as to make the understanding complete between those who enter the contest and ourselves. We find, however, that there are still a good many questions to answer and we have arranged with the publishers of MOTOR TALK for these two pages, which will be devoted from now until the close of the contest to information regarding same.

## QUESTIONS ASKED AND ANSWERED

V. B. writes to inquire whether in case of a contestant selling more than one machine and yet failing to win one of the larger prizes, he would be entitled to $10 for each machine sold. Our answer to this is, yes. The intent of our proposition is that no effort shall go unrewarded.

W. H. B. writes to know if we have any objections to his going in partnership with one of his boy friends who wishes to work with him on the contest. We certainly have no objections, and wish the new firm of B. & B. hearty success. This is a good idea for others of you to follow.

R. W. and several others write us to the effect that there are no local agents in their respective towns, and inquire if they can have the appointment as local agent. In each case the request is referred by us to the Oldsmobile general agent in whose territory the town is located. To make this clear let us explain that the whole of the United States is divided up between a large number of general agents. Under these general agents are sub-agents who deal direct with the general agents instead of with the company. And our agreement with these general agents makes it impossible for us to appoint agents in their territory except through them. As we said before, we have in each case referred the request to the general agent of the territory, and if in reasonable time you do not hear from him write us again.

Here is a sample of the letters we receive:

J, Miss., July 13, 1905.

The Oldsmobile Contest, Detroit, Mich.

Dear Sir:—Your "Message to Boys" received, and I am very much interested, and think I can sell a number of your machines.

We have a city here of twenty-five thousand people, good streets, and the town is growing very rapidly, and is getting the "auto craze."

I would like to know if you will sell on any kind of terms with good endorsement; if so, I think I can place a machine right away.

Please send catalogues to the following: ———, ———, ———, and refer them to me. Yours truly,

D. M.

P. S.—I would like to know how I could get a machine to show.

In answer to the question contained in the above, regarding the selling of a machine on time if good endorsement is given, would say that this is a matter which has to be decided on by the general agent, but which can undoubtedly be arranged without difficulty.

Now, these are some of the questions about which more than one of you are in doubt. Other questions we have answered by personal letter. Just remember, boys, that there are a lot of you to take care of and if there is any delay in reply to your letter or if you fail to receive any reply, just write us again, and we will look it up and see where the mistake lies. Among so many it is very easy for a letter to occasionally go astray, and we don't want any of you to be disappointed or to think we do not appreciate your efforts.

Remember that while you have until December 1st before the contest closes, now is the time to produce results—make the most of your opportunity.

## CONCERNING THE OLDSMOBILE

Here are a few things some people have to say about the Oldsmobile:

Santiago, Cal., July 14, 1905.

"I am using my third Oldsmobile Runabout."

Concord, Cal., June 20, 1905.

"I have an Olds one-seat machine, and I find that it always goes despite my inexperience—just seems to be built that way. I found that monkeying with it has caused what trouble I have had."

Prescott, Wis., July 26, 1905.

"I am running an Oldsmobile at present and like it very much, having run it three years nearly every day without it stopping on me. I can say with truth that it is the *machine that goes.*"

The names of the above users will be sent on request. They are typical of the satisfaction experienced by every Oldsmobile driver.

## GIRL ENTERS CONTEST

While our message is addressed to boys, we see no real reason why girls should be barred from competing. The following letter explains itself:

"Merrick, Mass., July 19, 1905.

"Olds Motor Works, Detroit, Mich.:

"Gentlemen—In the July issue of Motor Talk I notice your advertisement with request to send a 2 (two) cent stamp for "A Message to Boys," and although I am not a boy, I am a *hustler,* and send herewith stamp for above Message.

"Assuring you that if the proposition is a worthy one, I am yours for business, and thanking you, I am, very truly,

"Age 13." "M. E. G."

Go in and work to win, and if there are any more girls who have the same spirit as the above writer, we want to hear from them.

If you need additional copies of "A Message to Boys," we will gladly supply them on request.

**Remember that we are always ready and anxious to give you any aid in our power—but your ultimate success will depend on your own efforts.**

Address all communications to

# Boys' Oldsmobile Contest

**DETROIT, MICH.**

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**Are newly designed and are used on high grade standard cars.**

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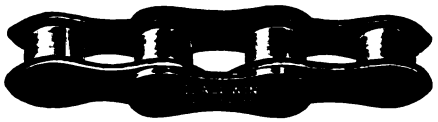

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**SALES AGENTS**

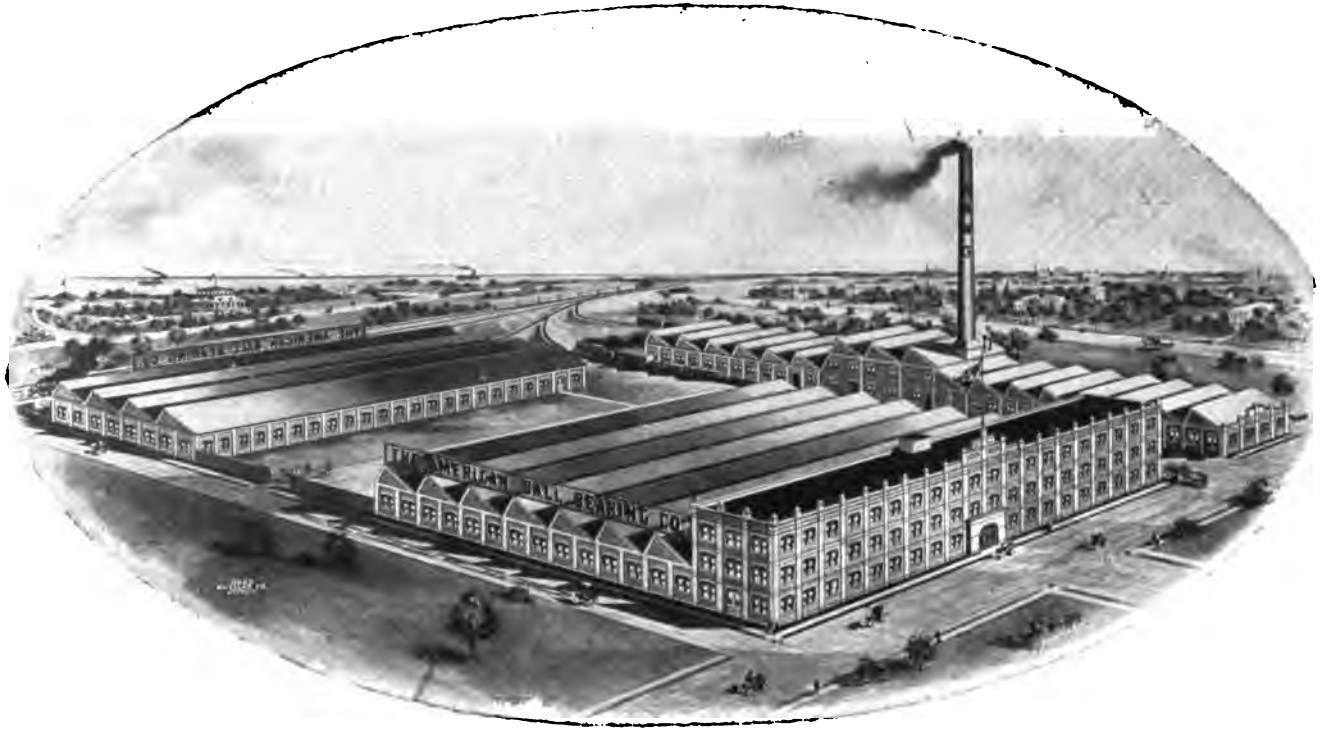
NOV 29 1905

# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

SEPTEMBER 1905

**The output of complete front and rear Automobile Axles of this plant exceeds the capacity of all competition combined**

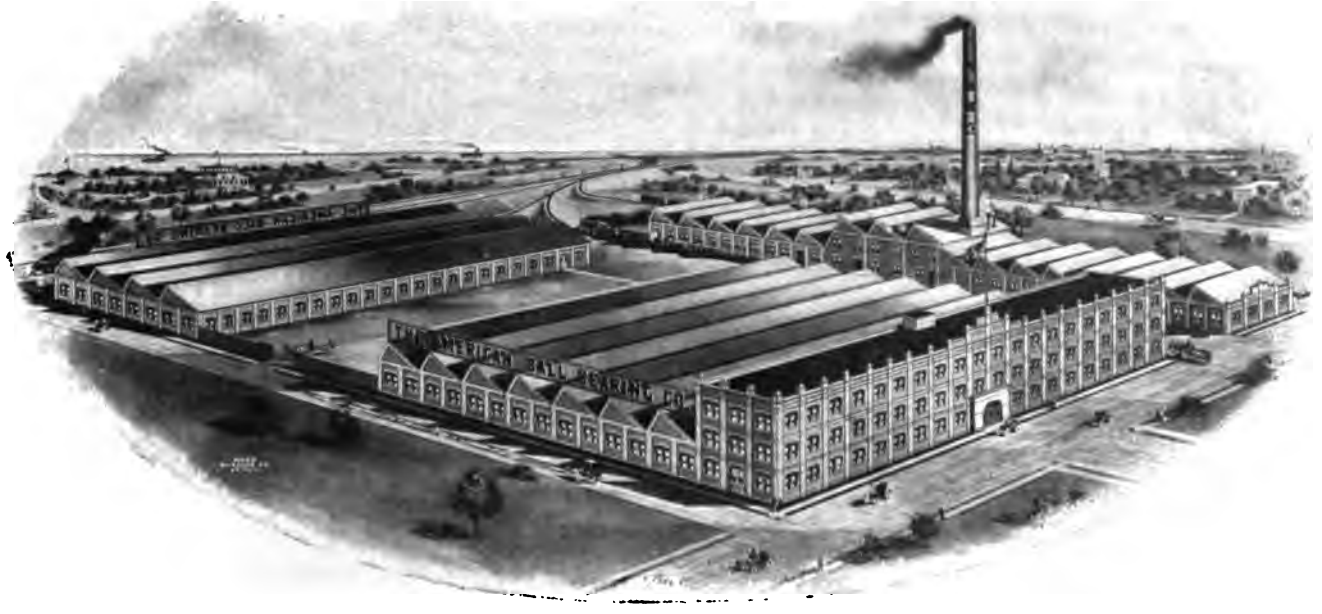



# THE AMERICAN BALL-BEARING CO.

L. S. & M. S. Ry. and Edgewater Park

CLEVELAND, OHIO, U. S. A.

**The output of complete front and rear Automobile Axles of this plant exceeds the capacity of all competition combined**



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## Have you a '01, '02, '03 or '04 Oldsmobile Runabout?

## If so, you can increase its power at least 20% by equipping it with a Holley Carburetor, at a cost of only $12.00.

We proved this to the Olds Motor Works, with the result that all 1905 cars are equipped with Carburetors of our make.

We proved this to the leading automobile manufacturers, with the result that they have been adopted by such leaders as the Mitchell Motor Car Co., E. R. Thomas Motor Co., Wayne Automobile Co, Ford Motor Co. and scores of others.

**Holley Carburetors give greater power, more speed, makes starting easier, all with a saving in fuel consumption, that will pay its original cost in a few weeks.**

**They are very compact, are built by skilled workmen and are readily adjusted.**

**Write us by return mail for price list and illustrated booklet, giving complete information.**

ADDRESS, **HOLLEY BROS. CO.**

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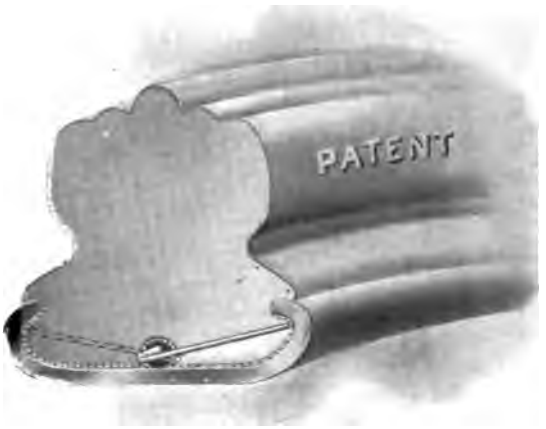
PICKING UP NAILS DOES NOT BOTHER YOU IF YOU ARE USING

## "Swinehart Tires"

ELIMINATE YOUR TIRE TROUBLE AND YOU HAVE NOTHING BUT UNALLOYED PLEASURE LEFT




Write for Catalog No. 5

## The Swinehart Clincher Tire & Rubber Co.

AKRON, OHIO

# "Are-and-be"

## FLAT OPENING Detachable Leaf Ledger

Combines positively the only perfect flat-opening ledger paper made with the strongest and simplest mechanical construction used in connection with a ledger binder.

The famous Backus Bond-Hinge all-paper flat-opening ledger stock is made at the mill by a union of **bond** and **ledger papers,** producing **great strength** and **absolute flexibility** at the binding margin and at the same time **decreasing** the **thickness** at this point. You will note that this sheet is not weakened by any process of crimping, buffing, scoring, nor gouging.

The Current Ledger Binder is made with a square back, thereby preventing any chance of rolling or rocking with every varying pressure of hand or arm. There are no loose pieces, springs, chains, ratchets, or other cumbersome mechanism to get out of order—the expansion and contraction of our ledger being controlled by two traveling lugs—the only wearing parts.

All parts of this binder are interchangeable, so that should an accident befall the ledger it is not necessary, as with other makes, to return the binder to the factory for repairs. Any repairs necessary can be made on our binder without taking it out of the office. Our backs are also interchangeable, so that if the maximum capacity of the current binder is reached, a new back can be substituted without any additional charge.

Our free Catalog S, fully illustrated, is descriptive of this grand ledger; the Backus Bond-Hinge all-paper sheets; and our Improved Trial Balance Book, with extension recapitulation sheets. Mailed promply on request. Send for it. It is worthy of your attention. Send to-day, because there is a distinction in loose-leaf systems, and in the "Are-and-be" Detachable-Leaf Ledger you get the best of that distinction.

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**DETROIT, MICHIGAN, U. S. A.**

**NEW YORK OFFICE, New York Life Bldg.** **BOSTON AGENTS DUNN & CO., 170 Summer St.**

AUTOMOBILING IN UTAH—THE MORMAN TEMPLE, SALT LAKE CITY.

# MOTOR TALK

A MAGAZINE OF OUTDOOR SPORT

VOL. I. SEPTEMBER, 1905 No. 9

## Practical Use of the Automobile

### An Article on the Automobile as a Means of Country Travel—By H. P. Burchell

*From Outing*

TO the owner of an automobile its greatest charm lies in the countless opportunities it furnishes for convenient travel. The touring-car has truly become a fixed type of the horseless vehicle. The ponderous, dust-raising, loud-snorting, racing cars, that look more like a troublesome gift from the devil himself than a beneficent gift from the gods, may have their devotees, but the joys of making a mile in several seconds less than a minute possess no charms for the man who bids his wife and little ones clamber into his neat, compact touring-car and then, with a twist of the wheel, starts off noiselessly and easily on a trip of some hundred miles through picturesque bits of country. Where is he going? Where will he stop over night? How many miles will he run a day? To such questions, perhaps, the owner himself could give no answer. He may have a fairly clear idea regarding his terminus, but there is a pleasant vagueness about the intermediate stations, contributing something of that spice of curiosity to his tour, that, in larger measure, forced the pioneers of old to push on into unknown regions wondering what they would see or find next. This freedom, this independence, this being in the largest possible degree completely master of one's self, constitutes one of the greatest charms of country travel by automobile. That horrible fiend, the railroad timetable, is banished to the far woods: no longer does the early morning "tramp, tramp" and sharp "tap, tap," of the hotel bell-boy rudely disturb one's quiet sleeping with the peremptory summons, as articulate as if spoken in words, to get up or miss the train; no longer does the perspiring traveler on the slow-moving local hurl anathemas at unseen and unknown foes because of interminable delays, soft-coal dust, soot and a long absence of ice water from the receptacle that tantalizingly bears those words. No, the steel rails with their varying degrees of speed have ceased to be a necessity to the summer tourist, who, with a little means and unlimited capabilities of enjoyment, is willing to intrust himself to the mercies of the country roads, good, bad or indifferent, as they may be, and plain but usually substantial living in the village tavern. He can travel as slowly and sometimes as fast as he pleases and can run off the main road, here and there, visiting little-known places of historic or picturesque interest which would ever have remained to him as a sealed book had he been restricted to the undeviating pathway of the steam road.

The great network of trolley roads has contributed enormously to country travel within recent years, but even the electric roads have their limitations. Years ago the bicycle was hailed as the great emancipator from the railroad and the trammels of city life, offering to thousands of persons the benefits of healthful, open-air exercise in the rural districts. The bicycle did a great work, but naturally its use was restricted, very largely, to those of the younger and more athletic age. Bicycle tours in Europe, where good roads were more numerous than in our own free land, were all the rage, and the historic inns and alehouses that had been languishing since the decline of the old coaching days became wonderfully popular and active. Indeed, a trip to Europe was not considered complete unless the visitor spent at least a night in some quaint out-of-the-way English pot-house and imagined all sorts of gay things having taken place within its

walls in the days of good "Queen Bess."

The bicycle had its day as a popular means of travel and touring. An interregmum followed. The ale-houses again sank into desuetude and scores of them were not aroused into wakefulness until a year or two ago when the prolonged *toot, toot* of the automobile horn told them that good times were coming around once more. And, as the automobile has benefited many trades, so it has, in the country districts, contributed wonderfully to the improvement of the typical village tavern. The last two years has witnessed a great transformation in this respect throughout the smaller towns of New England, and the same is probably true in other parts of the country where automobilists are frequent and good paying visitors. In fact, the automobilist is looked upon by the Yankee inn-keeper as a very desirable customer. The stories of the cost of these wonderful horseless cars have not been lost upon the shrewd provider of victuals and drink, and the stopping of an automobile party at one of these old-fashioned resorts usually means an increase in prices. It must be confessed that, if over-taxed, the motorists themselves are generally to blame. The influx of moneyed tourists who appear anxious to spend their money always works a hardship to the parties of more moderate purses who follow. However, these little things usually find their proper level, but if they lead to better accommodations and a few necessities, if need be, for his machine, the automobilist is perfectly willing that the price should be commensurate with his own comforts.

Not alone has the automobile caused the minor hostelries to spruce up a bit, but in the large country hotels automobile garages are now to be seen completely equipped, often employing several expert mechanicians who can repair over night any little trouble to the machinery and start the car off as good as new in the morning. The big hotels now give as much attention to the perfection of their automobile conveniences as they used to and still do to their stabling quarters. Indeed, many of the leading hotels in New England keep several automobiles to hire out by the day or longer periods. All of the prominent summer hotels in Lenox, Pittsfield, Great Barrington, in the popular resorts along the Sound and even in the White Mountains are completely equipped for all ordinary automobile needs. The change in this respect has been remarkable, but it simply illustrates the wide area covered by the automobile.

Native animosity has also been worn down and frequently stamped out entirely by the steady invasion of the rural districts by the motor-car. The opposition of the backwoods farmer to the appearance of this strange, self-propelled car among his barnyard "critters," has more than once given careful and law-abiding tourists not only a moment of anxiety, but the opportunity of studying human nature under its most crotchety conditions.

"Better arbitrate and conciliate than dispute and aggravate," is the sound legal advice of James B. Dill, who belongs to that delightful band of automobile enthusiasts who do not believe that business should stand in the way of a motor-car. Mr. Dill conciliates not only by the persuasiveness of his voice but, to the ordinary farmer, by the more potent influence of a good Havana cigar.

"Cigars are as necessary as gasoline to insure a successful automobile trip," is one of Mr. Dill's axioms, and he ought to know, for he has gone with his machine in some portions of Maine and Canada where no automobile ever went before or since. Mr. Dill lays out for his trip a liberal supply of good cigars, no five-cent Raines Law Hotel variety, but the kind that will go straight to the heart of any smoker.

"A gentle word backed up by a good

AUTOMOBILING IN THE WEST—FORDING A MOUNTAIN STREAM.

AUTOMOBILING IN INDIA—A SHANN PRINCESS—RANGOON, BURMAH.

A PICNIC AT EAST BAY NEAR TRAVERSE CITY.

country dance or theater parties. All of this traffic has been handled from door to door or from gate to gate as the case may require, in a way impossible to the street railway, confined, as it is, to the rails. We find the public takes kindly to this proposition when properly dealt with by careful drivers. And, by the way, the success of any traction company, I think, lies practically, if not wholly, in the efficiency of the drivers. I would like to suggest that the automobile journals might encourage young men of ability to take up this kind of driving as a profession, for the drivers of an automobile bus are the locomotive engineers' of the new enterprise, and the success of the system lies with them. It is a good field for them and an unlimited one."

The company at the present time has three Oldsmobile wagonettes in commission, one making daily trips between Traverse City and Old Mission, a run of 18 miles, two trips each way, or 72 miles daily, a run impossible for the horse-driven stage without a change of horses. The other two are operated on the streets of the city and between Traverse City and East Bay, a run of about 3 miles to a point where local business men are rapidly building up a very thriving resort.

An Oldsmobile freight car, having a large capacity, has just arrived and gone into commission for the service along the Old Mission road. It is expected that it will find a large amount of business in conveying small fruit to market.

In order to test the service for himself your representative took the drive over the various routes. The run to Old Mission proved most delightful. Leaving Traverse City at 3:30 on a pleasant afternoon, Old Mission was reached, after an easy run, at 5 o'clock. Numerous stops were made along the way in order to allow your correspondent to secure pictures, there being no need of haste, as most of the party of eight, besides the driver, who made the run, were taking the trip to enjoy the delights of the ride through picturesque scenery. Two of the party were on business bent, but made no objections to frequent stops.

The camera is more effective than the pen in describing the road and its pleasures as it winds along the shore of West bay from Traverse City, a distance of 9 miles, until Bar's Harbor is reached, where it abruptly turns off to the center of the peninsula, winding up hill and down over the last 10 miles to Old Mission. Old Mission, as its name implies, was established by the early Indian missionaries, and was for many years the center of activities in Grand Traverse regions. Here the first Indian trader was located, he being the first white man to penetrate into these wilds. Nearly half a century ago the government gave the Indians a reservation on the east short of West bay, where the village of Pe-sha-ba-town is located, and where the resort of Omena now flourishes on the site of what was long known as New Mission.

At Old Mission your correspondent took advantage of the half hour's stop to make inquiries among the residents as to the general sentiment regarding the traction company. Expressions of opinion were unanimous in its favor, the only objection being that on the present schedule it was impossible for a citizen of the Mission to leave there in the morning, spend the day in Traverse City and return late in the

THE SAME MAN SERVES AS DRIVER AND CONDUCTOR.

in his veins the slightest drop of sporting blood will re-echo, "Them's my sentiments."

Every part of New England offers delightful opportunities for pleasant touring. The journey from New York to Boston is a favorite one and is traveled by hundreds of automobilists every season. Some take it leisurely, passing through New Haven and Hartford and then skirting the Connecticut River to Springfield, from where some delightful short tours may be made, then continuing on through Worcester and so into Boston. The roads around Boston are admirable for day trips and the interesting historic associations with which every one of these routes is filled adds materially to the charm of the run. Taking the road rendered famous by Paul Revere's ride, for instance, with its warlike associations of Concord and Lexington, in which are also mingled some of the most hallowed literary reminiscences of New England, one can appreciate the perfection of motor-car touring, for the roads are excellent, the scenery delightful, the points of interest brimful of patriotic fervor and the country inns fully up to the standard of New England's best hospitality.

New York also presents many admirable tours for the automobilist. The run up the Hudson to Albany will discover good roads and accommodations, but between Albany and Buffalo are many sections that have been the *bete noir* to hardy motorists, the roads, especially in wet weather, resembling beds of mud more than civilized highways. But the automobile is changing all this, and another and perhaps the most important of its benefits to humanity is the impetus given to the good-roads movement by the advent of the horseless carriage.

New Jersey contains many good roads, and fair touring routes may be found to the Far West. The run to Chicago has ceased to be a novelty, and the memorable tour of the American Automobile Association last summer to St. Louis, over one thousand five hundred miles being traveled successfully by many members from New York and other Eastern cities, demonstrated more conclusively than ever before the complete reliability of the motor vehicle of the present day and its all-around possibilities. The American continent has been crossed more than once, all of them experiments and with an eye to business, to be sure, but their success again demonstrated the capability of the automobile to go anywhere that it is possible for a horse-drawn conveyance or a railroad train to go.

Colorado has become a popular State for the automobile tourist. The picturesque grandeur of the country intensifies the attractiveness of the tour, the roads for the most part are good, and if one is careful to select proper routes he can avoid severe mountainous hills. But hills no longer terrify the motorist. A few years ago a hill of more than ordinary steepness gave the tourist cold shudders. The demand in recent years has been for cars of moderate horse power, built so strongly and yet lightly that they can stand the strain of thousands of miles and climb hills at a pretty fast clip in the bargain. The manufacturers have succeeded in turning out such machines and they have found a ready sale. A close student of automobile growth in America has stated that there is now in use one automobile to twelve hundred inhabitants. Two years ago the ratio was one to six thousand five hundred in-

HIS FIRST LESSON.

habitants and four years ago it was one to one million five hundred thousand inhabitants. A whole story is contained in these figures, and the high average of the present day means continued touring in country districts and a larger ownership of automobiles by country residents.

Automobile tours in Europe have become so common as to give no excuse for comment. It is now possible to hire cars with responsible chauffeurs in London for a tour of a week or a month outside of London, extending up into Scotland if required, and even the rougher roads of Ireland have been traveled by automobilists. In France, of course, every one expects good roads just as he does good cooking, and a disappointment in either case is so surprising as to be remembered ever afterward.

The crowning glory of automobile touring, however, lies in the demand it has created, in all parts of the world where motor-cars are being used for pleasure or business purposes, for good roads. Here in America the good-roads movement, within recent years, has become a question of national importance. With the exception of a few States, notably New Jersey and

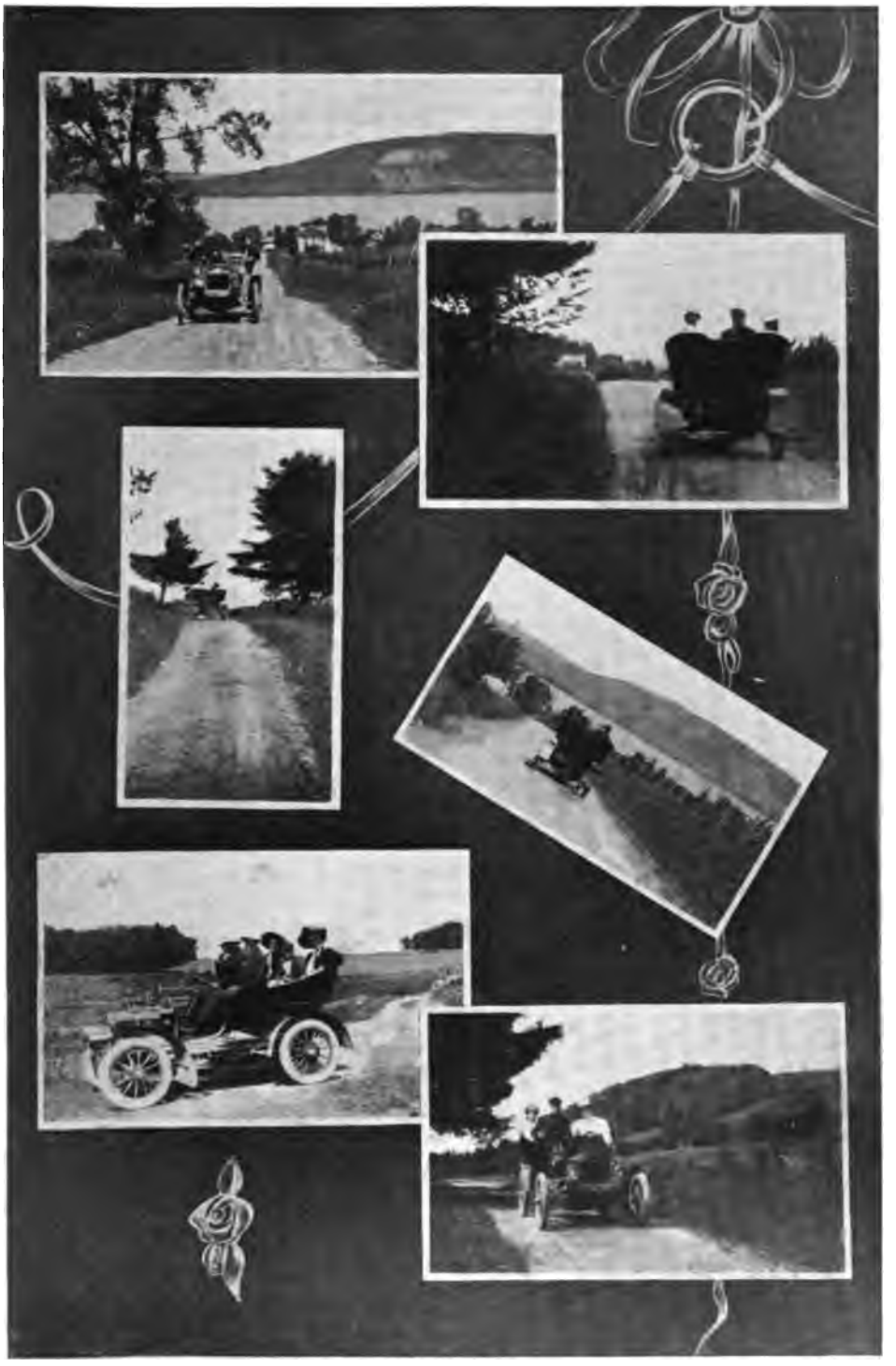
Massachusetts, the subject of better roads was the last thought that gave the legislators the least particle of trouble. The Automobile Club of America, in its younger days, expended a tremendous amount of argumentative energy in endeavoring to convince the lawmakers of New York that money expended on good roads was a good business investment. Their appeals brought out a few thousand dollars, somewhat grudgingly given. Finally the generous sum of one hundred thousand dollars was appropriated, and at the forthcoming election a constitutional amendment will be presented to the voters providing that the State may bond itself for five million dollars for ten years for the building of improved wagon roads.

Agitation has been productive of similar good results in other States. Governor Dineen, of Illinois, gave a marked illustration of the growing demand for better roads in the West when, in his last message, he made a strong plea for the expenditure of more money and careful thought upon road building. His statement that barely two per cent. of the Illinois roads were suitable for traffic at all periods of the year was no exaggeration, and scores of other States could show no higher average. Departments of highways have been established in California, Idaho, Minnesota, Mississippi, Missouri, Oregon, Tennessee, North Carolina, Nebraska and in several of the Eastern States in which the good-roads movement has languished. Florida recently appropriated five hundred thousand dollars for good roads, and it is confidently predicted that within a short time there will not be a State in the Union that will not manifest a just pride in the increasing mileage of its serviceable roads good all the year round.

Reasonable credit must be given to the automobile for bringing about this condition of affairs. While legislators have been busy, ever since the motor-car began to assert itself as entitled to the ordinary privileges of the road, in enacting laws regulating its speed and compelling the affixing of license tags and other marks of easy identification, the motor-car has been steadily demonstrating its purposes of utility, and perhaps unconsciously has paved the way for lasting benefits to all classes of citizens.

MOTOR BUSS LINE BETWEEN MANCHESTER AND CHELSEA, MICH.—START FROM CHELSEA

AUTOMOBILING IN OREGON.



THESE PICTURES TELL THE STORY OF A PLEASURE TRIP FROM ELMIRA, N. Y., TO KENKA LAKE AND VICINITY. THEY BEAR ELOQUENT, THOUGH MUTE TESTIMONY TO THE DELIGHTS OF AUTOMOBILING.

# The Commercial Vehicle

## An Article on the Commercial Value of the Automobile

By E. D. Trowbridge

MANUFACTURERS of automobiles have, from the first, felt the demand for commercial vehicles. They naturally, in their anxiety to fill orders, used what they had on hand to take care of the business, building special bodies and mounting them on the engine and running gear of machines designed primarily for pleasure work. The results were, of course, unsatisfactory, and continue unsatisfactory where the manufacturers continue this policy.

A pleasure vehicle, even if ideal for pleasure work, is rarely suitable for adaptation for commercial usage. The pleasure machine runs as a rule on good roads in good weather only, and generally speaking, under favorable conditions. The average mileage made does not exceed twenty-five miles per day. A commercial machine has to run wherever business takes it, must be operated under all sorts of weather conditions, and is driven from fifty to one hundred miles per day. In designing a machine, therefore, to get practical service, it is necessary to figure on strong parts, and to so plan construction as to limit to the lowest possible degree chance of breakage, wear and tear, interruption to service and repair expense.

The commercial machine has a powerful and well established competitor in the horse-drawn vehicle, and to be really commercial it must be so built as to show in total results utility, reliability, durability and economy of operation as compared to the horse. Some manufacturers have figured that if a machine would cover five times as much as a horse-drawn wagon in ordinary delivery service, there would be great efficiency, particularly in the labor account. Such a result can only be obtained by a high rate of speed, which involves risk of accident, and also involves much greater wear and tear than where the machine is run at a reasonable speed.

Generally speaking, pneumatic tires are impracticable for commercial work, not only in point of the tire expense, but because of the frequent interruption to trips, due to puncture or other troubles. The practical commercial machine must, therefore, be designed primarily to stand the extra vibration that goes with a solid set of tires. One company in particular has been experimenting for two years on commercial work. They have built, during that time, six or seven different types of machines, which were given a thorough trial and usually abandoned as impracticable. Each machine has, however, suggested improvements, and a number of machines built a year ago have given such satisfactory service that the factory is building a total of over one million dollars' worth of commercial machines this year.

The economy of a well-built automobile lies in the following points:

First.—It has a much greater traveling radius. This company has, after repeated experiments, decided on a speed of about fifteen miles per hour as a maximum for delivery car, handling a load of one ton or less, it being figured that the car will travel at an average rate of about twelve miles per hour. At this rate the machine, making allowance for stoppage, etc., will do the work of about two and a half horse-drawn vehicles. Where there are few stops and where, as in the case of stage-coach routes, it is a matter of mileage, the machine will cover one hundred to one hundred and twenty-five miles per day with ease, whereas, with a horse-drawn coach, even if four or five relays of horses were operated, a distance of not more than sixty or sixty-five miles could be covered. In delivery work, the greatest saving is on the labor account. In transportation of passengers there is an equal saving of labor as well as a saving of time for passengers.

Second.—The automobile is just as fresh after a trip as on the start. This greatly reduces the expense of reserve horses. The average department store carries a reserve of from fifty to one hundred per cent. of horses. It is appreciated that there will be times when the automobile will be out of commission, and a reserve of from five to twelve per cent. should be ample.

Third.—The maintenance of an automobile which is merely standing in the garage involves no expense. This is important at slack seasons of the year, and is important also with regards to reserve machines.

Fourth.—While the machine is economical where great traveling radius is required, it is also economical where only a limited amount of work is required. For instance,

in a small town a hotel may be obliged to keep a bus and two horses to meet three or four trains per day. Even if the total mileage run is only five or six miles, the expense of keeping the horses for this small mileage is just as great as if the horses were driven an average of twenty miles per day. With a machine, the expenses being for fuel, tires, replacement of machinery and repairs, the amount of expense is solely dependent on the amount of mileage run.

Fifth.—The automobile takes up much less space in the streets and barn room than a horse and wagon. In congested cities this is a matter of importance.

Cost of operation per mile for machine will vary greatly with the condition of service—that is, total mileage per day, number of stops made, speed required, weight of loads to be carried, etc. In a general way, a one-ton delivery wagon will cover sixty miles per day, including stops, at an expense of eight to ten cents per mile. This figure includes gasoline, lubricating oil, repairs, allowance for tire replacements, depreciation, interest on investment, and driver's wages. The cost will vary considerably with the cost of gasoline, wages paid, care with which the car is driven and the care of driver in keeping the car properly lubricated and in good running order. This will give an annual expense of from $1,500.00 to $1,800.00 per machine. This figure may be somewhat high as compared to one horse and wagon at $1,000.00 to $1,200.00. It should be remembered, however, that the estimate is based on a mileage of sixty miles per day, or nearly three times as much as the mileage covered by a horse-drawn vehicle. Should the mileage be figured at twenty-five miles per day, the expense of operation of the automobile would be greatly reduced.

The next two years will show a great development of automobile trucks to handle loads of two, five and ten tons. From our study of the conditions, we are convinced that a five-ton car should not have a speed of more than five to six miles per hour, and that so far as fuel, repairs, etc., is concerned, a five-ton car would be operated almost as cheaply as a one-ton car. In the heavy trucks the engine need not be of much greater horse-power than in a one-ton delivery machine. The heavy car would simply be geared to run five miles instead of fifteen, and the power of the engine be applied as power to the driving wheels, rather than be utilized for speed.

The automobile is rapidly developing in the field of passenger service. There are many rural districts where the population is not heavy enough to warrant construction of trolley lines. In such cases the automobile, with a very small investment, gives a satisfactory service. Numbers of interurban and stage coach lines are being organized throughout the country, and in a good many cases city traction companies, to use automobiles, are being organized in cities not large enough to warrant the great investment in a trolley plant.

MOTOR BUSS LINE BETWEEN MANCHESTER AND CHELSEA, MICH—MEETING THE TROLLEY.

# The Automobile and the Suburbanite

## An Entertaining Article by Thomas S. Call on the Motor Car and its Relation to Suburban Life

*From July Suburban Life.*

THE automobile is destined to play a conspicuous part in the development of suburban districts. It has made it possible for men with offices or places of business in the large cities to live in country homes many miles from the marts of commerce.

Since the introduction of the automobile (by the way, this name is fast giving place to motor car), the radius of typical suburban homes has been rapidly widened, and to-day a man may live twenty miles from his place of business, own a farm of a hundred acres and yet call himself a suburban resident.

The multiplication of flats (a polite name for tenements) is driving thousands of people away from the cities' congested streets to the open fields of the country, where it is possible to live in a much simpler and more normal manner. The flat dweller feels that he is constantly on exhibition. He dares not dress in negligee for fear of being criticised by his neighbors, and his wife is subject to many petty annoyances which she escapes in the more commodious suburban home.

Many a man who cannot afford an automobile while living in a city house finds that his income will allow this luxury after he moves to a country place where living expenses are less. In his new home, too, there is ample play-ground for the children, away from the danger of passing trolley cars, and where they grow and thrive as they never did in the limited confines of the city apartment.

The average man of sedentary habits suffers from a lack of sufficient exercise. The fact may not be appreciated as it should, but it is true that automobile riding furnishes a large amount of helpful exercise without danger of causing strains or injury. The work of steering, gear changing, managing the foot pedals, together with the jar, swaying and jouncing of the car all work toward this end. Riding in a motor car may be compared in many ways to horseback riding, although the exercise is less violent.

Driving an automobile is an excellent mental stimulus for the man who feels the need of turning his mind away from the cares and worries of business. The man who is driving a horse relies to a considerable extent upon the animal's intelligence, but the man who is handling an automobile must focus his entire attention upon the machine.

When moving from the city to the country, the members of the family are liable to feel that they will be cut off from their friends and forced to miss many of the pleasures which they have enjoyed. They may have a telephone, but it is obviously impossible to play a game of whist or conduct a dinner party over the wire.

Probably the first suggestion would be the purchase of a horse, but at this point the suburbanite should stop to consider the matter. A horse does very well when short distances are to be covered, and a gentle family horse is available for the use of ladies and children. The first expense for a horse and an outfit probably would be less than the cost of an automobile. A fairly good horse and carriage may be purchased for from two hundred to three hundred dollars, while the prime cost of a good motor car of family size will come close to one thousand dollars.

On the other hand, an automobile is ready at a moment's notice for a journey of any length. The owner of a horse would not feel like taking him out for a drive of more than fifteen or twenty miles each Sunday, but the proprietor of an automobile thinks little of a fifty-mile spin. One never feels like urging a tired, sweating horse on a hot summer day, but the automobile spins along regardless of weather conditions.

The possession of a horse implies the expenditure of no little time in harnessing, cleaning and otherwise caring for the animal, which must be fed three times a day and can never be left alone for more than a few hours. I do not mean to suggest

AUTOMOBILING IN MEXICO.

[illegible] and no county, city, town or village of the State is permitted to pass special ordinances.

The provision referring to registration also applies to nonresident owners having complied with the law of their respective State, territory or Federal district, or foreign country, requiring the registration by owners of motor vehicles, and who shall have displayed upon their motor vehicles the registration number and name or initial of their State substantially as in this act provided, provided, however, that such territory, Federal district, or foreign country extends similar privileges to motor vehicles registered under this law.

The last provision gives Michigan the honor of being the first state to recognize interstate registration, and it is probable that the clause "provided, however, that such territory, Federal district, or foreign country extends similar privileges to motor vehicles registered under this law," will have great weight in promoting interstate registration in the West.

What a variance is this from the Missouri law which limits the speed of automobiles to nine miles an hour in any part of the State and allows each county to impose a license fee of $2.00 and the city of St. Louis to charge a fee of $10.00. The license must be secured in person, and if one runs over the line into a county in which he has not taken out a license, he is subject to immediate arrest, even before he can get to the county seat to obtain a license. In traveling across the State of Missouri the license fees are the largest items of the expense and the process of securing the license is accompanied by much annoyance and disagreeable red tape.

There are only two ways of avoiding such an unjust law as that in Missouri. One is by securing National or Federal regulation of automobiles. This, however, is held by automobile authorities to be impossible until the automobile has become a factor in interstate commerce. The other is through draughting a bill satisfactory to the automobile club in a certain State, and then to be submitted to automobile clubs in every other State for suggestions and approval. The final bill shall meet the requirements of automobile conditions in each state. When this is done every automobile club shall exert its efforts and use every influence to have the bill adopted by the legislature in its own State. It may be added that such a bill is being drafted by the law committee of a prominent automobile club, which feels very hopeful of its success in meeting with the approbation of all other clubs.

It is possible that the requirements of some States may be such that their unhappy conditions will detract from the liberal legislation of other States, but the general average will be such as to make the entire project worthy of consideration and, if possible, of adoption.

AN AUSTRALIAN FIRE BRIGADE—READY FOR THE RUN TO A FIRE.

HER ROYAL HIGHNESS, QUEEN MARGARET OF ITALY, AN ENTHUSIASTIC AUTOMOBILIST, WHO OWNS TWO RUNABOUTS AND TAKES DAILY RIDES, ALWAYS DRIVING HER OWN CAR. SHE IS FOLLOWED AT A RESPECTFUL DISTANCE BY A SECRET SERVICE MAN, A NECESSARY PRECAUTION, AS NO LESS THAN THREE ATTEMPTS HAVE BEEN MADE TO WRECK HER CAR, THE THIRD ATTEMPT OCCURRING WITHIN THE LAST MONTH.

is the wear on the tires and the greater the expense of running the car. Further than that, if you are hospitably inclined, you will find your pocketbook constantly drained for lunches, dinners and sundry expenses of a similar nature. I feel that the place to entertain is at one's home and not in his automobile or at a hotel, and, by the way, there is no place so suitable for entertaining as a country or suburban home. The flat dweller with a two by four pantry and so little room that he is forced to buy his flour by the quart has little opportunity for any real display of hospitality.

To return to the point under discussion, it is as senseless for two people to use a big touring car in making short trips about the country as it would be to use a coach and four for the same purpose.

Now comes the question of operating the car. Any one given an automobile and a highway can learn to pull a lever, start and stop the machine and even to turn a corner. But after all, the real chauffeur is born and not made. It goes without saying that the man who drives his own automobile ought to understand something about the anatomy of the machine. He ought to know why the wheels go around, or more often why they don't. Nine tenths of the delays, apart from those caused by the tires, are due to faults in adjustment, which if taken in time might have been remedied in two or three minutes. The matter of oiling and of keeping nuts and bolts tight must be carefully looked after. On the other hand, it is safe to say that the less a car is fooled with, the better for the car.

Some men ruin their machines by tinkering with them. I heard of one man who was constantly taking his auto to pieces and putting it together again. One day he was driving his machine along the road in the wake of a friend's motor car. The latter dropped his monkey wrench, and as this gentleman's car passed over every nut and bolt on the machine drop out, so well trained were they.

# The How and Why of the Automobile

## A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from August issue*)*

## CARBURETORS

**CARBURETION.**—Many of the uninitiated think that a carburetor is a very complicated piece of apparatus. Yet if they were to study the principles of carburetion they would be surprised at the simplicity of this most necessary part of the gas engine.

A carburetor is a device for producing a mixture of fuel and air in a correct proportion for complete combustion.

You have, no doubt, seen the physician give an anesthetic, but it has doubtless never occurred to you that in this operation he makes use of the same principle as that employed in the gas engine carburetor; whether he uses a handkerchief or a cone, the same result is obtained, namely, that of producing a vapor of chloroform and air. The handkerchief becomes a carburetor in a wide sense of the word. When it is saturated with the anesthetic, and the air drawn through.

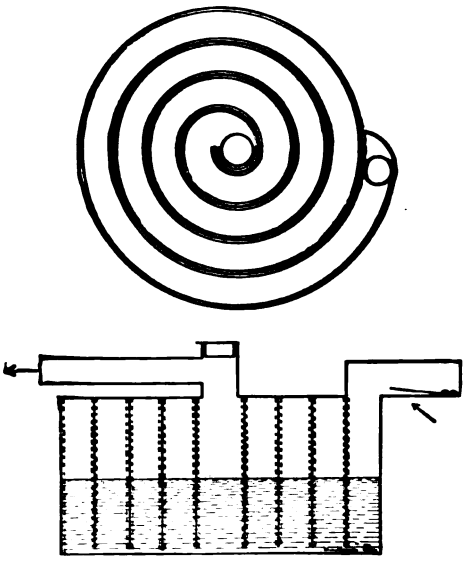


FIGURE 53—A WICK CARBURETOR

Air enters at right side and passes around to the center of the carburetor. The walls are covered with wicking saturated with gasoline. By coming in contact with this the air becomes saturated with vapor which is carried along into the engine.

*This valuable series began in the March issue, back numbers will be sent upon receipt of regular price

particles of vapor mix with the air, and enter the mouth and nostrils as a mechanical mixture. You can see that by this method a large amount of vapor is wasted, the air not being limited to a definite path. If it were limited to a definite path the patient would succumb much more readily, due to the fact that a greater amount of vapor would be received with each breath.

With this brief explanation of carburetion, let us see what happens when the same process is applied to the gas engine. The object to be obtained is the production of an explosive mixture, and experimenters have found that a mixture in proportion by weight of 16 lbs. of air to 1 lb. of gasoline will give the best results. You can easily remember this ratio if you will think of Mr. Bryan, or simply note that 1 lb. of air needs 1 oz. of gasoline.

**COMBUSTION.**—In order to understand why it is necessary to have this proportion of gasoline and air we must consider the subject of combustion. Combustion, or burning as we ordinarily call it, is the rapid union of any substance with oxygen and is accompanied by the development of heat and light.

In order to see the effect of perfect and imperfect combustion, take an

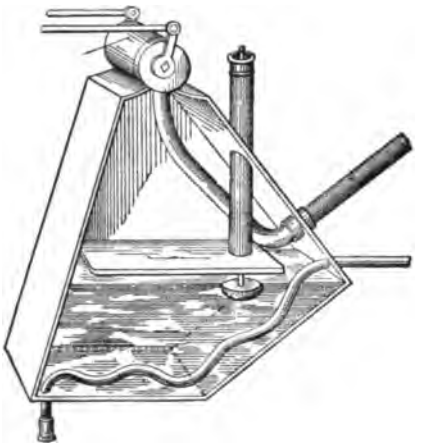


FIGURE 34—DE DION SURFACE CARBURETOR

Air is drawn down through the vertical tube and allowed to bubble up through the gasoline. The vapor is collected in the upper chamber and finally led out into the engine through the pipe on the right side of the drawing.

ordinary Bunsen burner, and close the air holes at the bottom of the jet. The flame immediately takes on a yellowish hue caused by incandescent particles of carbon. If when you open the air holes again you will note that immediately the flame turns blue and almost colorless, the excess of unburned carbon which was present in the other case now being completely burned. Thus you can demonstrate that when there is sufficient oxygen present to unite with all the combustible material, there will be no residue left to produce smoke or soot. Therefore, gas engineers have been putting forth their best effort to provide the exact amount of oxygen required to burn a certain amount of gasoline.

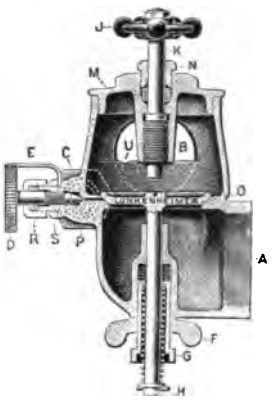
**GASOLINE.**—Gasoline is a hydro-carbon distilled from crude petroleum. It is lighter than water, its specific gravity ranging from .73 to .64. It is composed of carbon and hydrogen. During its combustion the carbon must be united with oxygen to form carbon dioxide, and the hydrogen with oxygen to form water. By working out the chemical equations you will find that the proper

amount of oxygen necessary to burn 1 lb. of gasoline will be 3.53 lbs. The amount of air necessary to furnish this amount of oxygen figures out 15.3 lbs. This, you see, is nearly 16, and for all practical purposes the ratio 16 to 1 will answer the purpose.

**TYPE OF CARBURETORS.**—There are three ways of mixing the fuel with air. First, by allowing the air to circulate through chambers lined with wicking or some other substance which exposes a large amount of surface to the air. The lower part of the vessel is filled with gasoline, and the wicks are allowed to hang down into this reservoir; therefore, you can see that as the air circulates through these spaces it will take up a certain amount of gasoline in the form of vapor. This method never gave very good results, the mixture would vary, and there was always a residue of gasoline left which, of course, meant loss in fuel economy. See Fig. 33.

The second process is by allowing the gasoline to enter a chamber beneath the surface of the gasoline. The bubbles of air rising through the liquid will, of course, take up a certain amount of the hydro-carbon, and a fairly good mix-

35 A



35 B

ture will be obtained in the space above the gasoline. This method is open to the same objections as the former, and therefore has been discarded.

The third type of carburetor, the one after which nearly all the modern carburetors are patterned, makes use of a system whereby the gasoline is sprayed into the path of the incoming air. There are innumerable ways of arriving at the same result, and every day sees new improvements in methods of controlling the gasoline, and ways of introducing air. Nevertheless, the ultimate object is the same, namely, that of producing a perfectly explosive mixture.

**THE MIXING VALVE.**—The mixing valve is probably the simplest form of carburetor. It has been used for marine work with very good success and promises to hold its own for several years to come.

Fig. 35 shows an exterior and sectional view of a very well known generator valve. You will note that it consists of an inlet pipe, the amount of air flowing through being limited by a valve O. At the left you will notice a gasoline feed pipe, provided with a needle valve D by means of which the amount of gasoline is controlled. The operation of this form of valve when applied

to the two-stroke cycle motor is dependent upon the alternate periods of pressure and partial vacuum existing in the crank case at the different periods of the cycle. When the engine begins to draw in a new charge, the valve O, normally held on its seat by a spring, begins to open. This action uncovers a small gasoline port in the side of the valve seat, and a given amount of gasoline is allowed to mix with the incoming air. This amount may be very nicely gauged by adjusting the needle valve D. A small hand wheel at the end of the valve stem is provided with numbers which show the different degrees of opening, and it is a very easy matter to properly manipulate the valve. Hence, having found the correct mixture, the wheel may be turned to that point, and left. The lift of the valve may be regulated by means of the small wheel J.

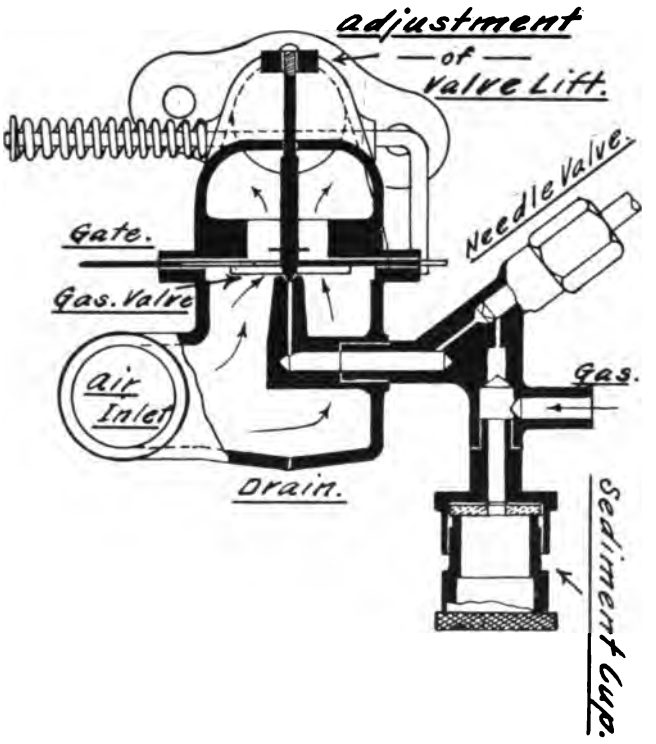



FIGURE 36

Another form of mixer which has given very good results is the one shown in Fig. 36. The gasoline is forced by means of the diaphragm pump, actuated by crank case pressure, from the gasoline tank up through a system of piping, and down into a gauze cone placed in the center of the inlet pipe. The air entering strikes this small body of gasoline retained by the gauze, and immediately breaks it up into a spray and carries it on into the engine. The amount of air admitted is controlled by means of a gate placed in the inlet pipe.

The flow of gasoline may be adjusted by means of a needle valve in the gasoline pipe.

Another type of mixing valve is that shown in Fig. 37. The system here used is nearly the same as that of the generator valve with the exception that a

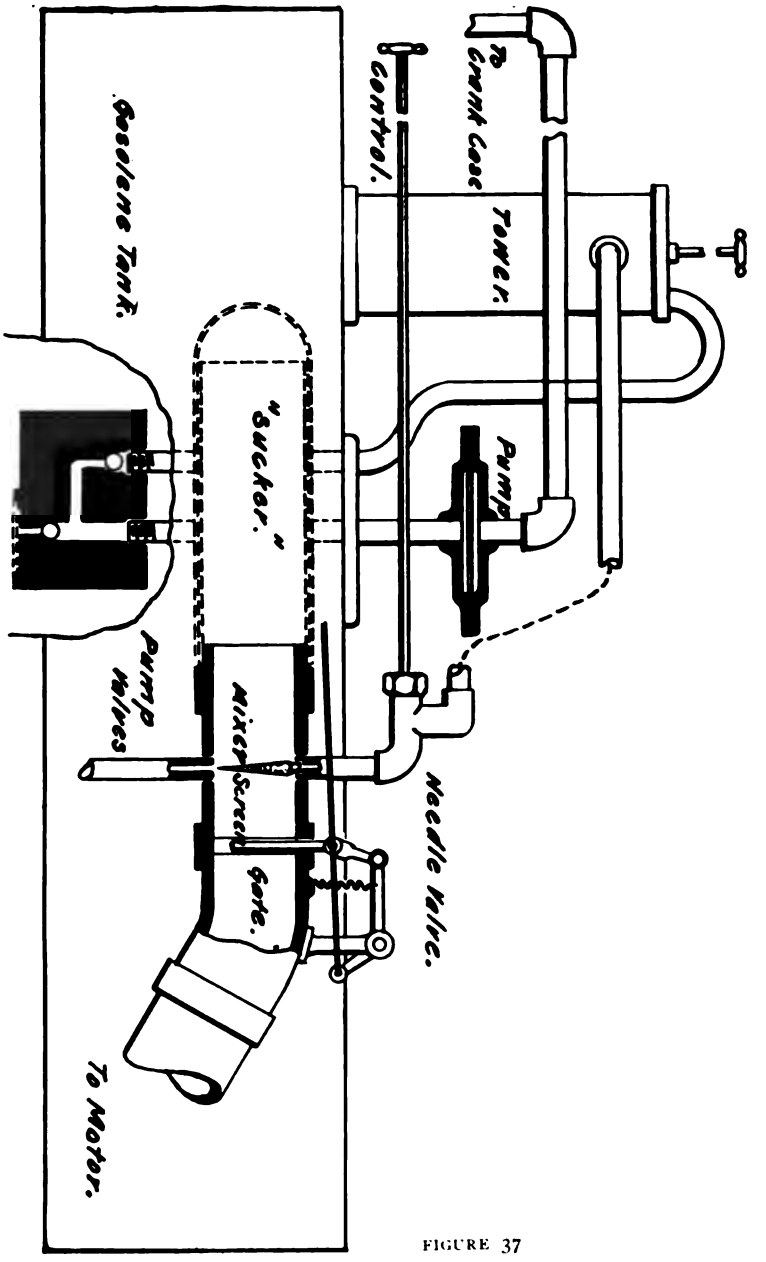



FIGURE 37

small needle valve is used in the place of the disk, and the amount of air is regulated by means of a gate passing over the gasoline nozzle.

*(To be continued)*

ON THE TRANSCONTINENTAL RACE—AN INTERESTING MEETING IN OREGON

and at the same time fulfill another set of conditions, that of giving a rich mixture for starting the motor.

The auxiliary air inlet usually consists of simply a valve opening inward, held in its place, by a spring of a certain known tension. The strength of the spring is carefully determined so that at the proper moment, when the motor requires more air in proportion to the amount of gasoline used, the valve will open just enough to allow the required amount of air to enter. You will see that the time and amount of opening will be controlled by the speed of the engine, that is, by the amount of suction produced by the movement of the

FIGURE 45.

piston in the cylinder. Of course, as the engine speeds up, there is a greater piston displacement to be filled per minute, and therefore it is necessary to supply a greater amount of mixture. Upon changing speed suddenly from say 500 revolutions to 900 or 1,000, the carburetor not having this device will not give a uniform mixture immediately, and, in fact, it might require a new adjustment of the gasoline flow in order to supply the right amount of fuel. What the auxiliary air inlet actually does, then, is to automatically control, above a certain point the amount of air admitted, thereby always maintaining a homogeneous mixture. In order to prevent any chattering of the valve or rapid changes in the air supply, a diaphragm or dash pot is sometimes used in connection with the value.

Fig. 42 shows a type where the former method is used. Fig. 43 is an example of the latter. In Fig. 42, instead of using a regular valve a piston valve is introduced which, however, accomplishes the same result in a slightly different way.

In some of the later types of carburetors you will notice that the float chamber surrounds the mixing chamber. This, of course, makes the carburetor more compact, reduces the distance through which the gasoline has to flow, and is in many ways a most satisfactory arrangement.

Improvements are constantly being made along these several lines, and each year brings out something newer and better in carburetor practice.

Fig. 45 shows one of the latest types manufactured by one of the leading companies. It combines many desirable features, among these being compactness, due to the fact that the float chamber surrounds the mixing chamber,

sensitiveness, yet easily controlled by proper system of float levers, improved type of adjustment, auxiliary air valve, practically no corners for gas to turn, easily accessible gasoline adjustment, and a well designed mixing chamber. The operation of this carburetor is as follows: The gasoline enters through the tube (a); this tube is merely slid into the inlet of float chamber, and held in place by packing nut (37), which is screwed tightly in place

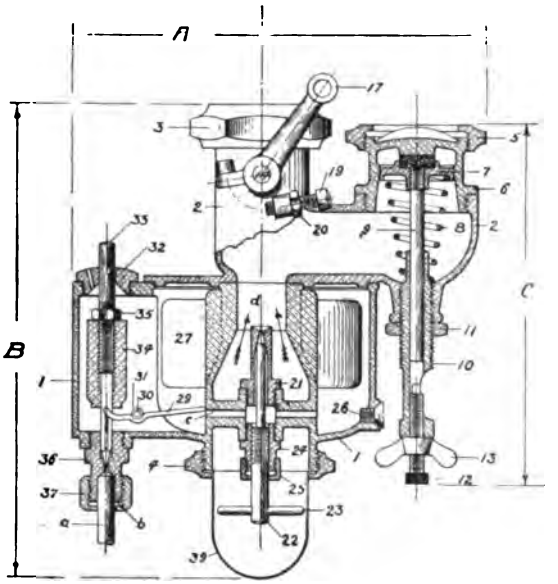



FIGURE 46.

after being filled with a quantity of packing at (b). As the float chamber fills with gasoline the float (27) rises thereby allowing the lever (29) to tip on its fulcrum (30) and by so acting allows the gasoline inlet needed to lower to its seat to shut off the inlet of gasoline and maintain the proper level which is about 1-16 inch below the top of the nozzle (21), the gasoline coming to this nozzle by means of passage (c).

Air enters the mixing chamber (2) through an air passage (d), which is constantly open and also through the air passage closed by air valve (7). At low speed the air valve (7) remains closed, closing the main air port, while the air passes by the nozzle at considerable velocity on account of narrow passage, accordingly lifting the required amount of gasoline from the nozzle to give proper mixture, and as the speed increases, the increased vacuum opens the auxiliary air valve (7) and maintains a perfectly homogeneous mixture.

*(To be continued.)*

# MOTOR TALK

A Magazine of Outdoor Sport

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## Among the Clubs

The Automobile Club of Topeka, Kan., has a membership of sixty. The officers of the club are Samuel Lyman, president; George Stansfield, vice-president; E. B. MacDonald, secretary, and Lewis Wyman, treasurer.

The following officers have been chosen to guide the destiny of the Rochester (N. Y.) Automobile Club: President, H. S. Woodworth; vice-president and attorney, John A. Barbite; treasurer, C. F. Garfield; secretary, Frederick H. Clum; governors, F. H. Bettys, George G. Foster, Griff D. Palmer, F. E. Mason, Lee Richmond, A. J. Rockwood, Harry G. Strong, John W. Bingeman and Austin F. Crittenden. The report showed that the present membership was 159, a gain of 126 during the year. The treasurer reported a large balance.

The North Jersey Automobile Club was incorporated last week. The officers are: Agent in charge, Frank Van Cleve; trustees, Geo. A. Post, Frank R. Reynolds, Wm. G. Norwood, Christopher Horandt, Fred A. Baer, Frank Van Cleve.

The Elkhart (Ind.) Automobile Club has been organized by the adoption of a constitution and by-laws, the former of which is a duplicate of the Chicago Automobile Club's. The following officers have been elected: President, C. G. Conn; vice-president, G. A. Briggs; secretary, R. C. Barney; treasurer, J. A. Cook; with a board of five directors. President Conn has announced his intention of giving a banquet, at an early date, to all the automobile owners in Elkhart, whose names will be enrolled on the automobile membership's list, and all will be expected to take part as members. At that time Mr. Conn will be prepared to announce the various committees.

The Atlantic Automobile Club has been incorporated. Headquarters of the club will be at 1531 Atlantic avenue. The incorporators are given as: Louis Kurbule, Harry J. Mullock, J. Everett Weber, John Donnelly, Robert M. Johnston and Charles F. Mack, all of Atlantic City. An oval mile track will be built for speed races in conjunction with the straightaway course on the beach. The plans are all outlined, but the club is desirous of getting the opinions of the racing drivers who will be at the meet to-day.

An automobile club has been organized at Austin, Ill. The officers are: Joseph H. Francis, president; James E. Plew, vice-president; John J. Miller, secretary; S. J. Crafts, treasurer; Dr. B. A. McBurney, surgeon; and Charles H. Burras, attorney.

The Omaha Automobile Club has been organized with the following officers: President, Thomas A. Fry; Vice-Presidents, Gould Dietz and Dr. Gilmore; Secretary, John Parrish, and Treasurer, H. Vance Lane. The objects of the club are stated as follows: To induce agreements as to road rules and speed regulations; to improve roads; to attain a better understanding among autoists and between them and the farmers and team owners.

Committees were appointed to draft constitution and by-laws. It is probable that the club will be incorporated, and that a club house, or at least luxurious quarters, will follow in a short time. For a while the admittance fee will be only $5, the intention being to get every automobile owner in Douglas county on the rolls.

This is the first attempt in Omaha to organize a club of automobile owners and drivers. The number of machines in town has nearly doubled this season.

---

Special investigation by Bradstreet's into the automobile industry shows that 100 manufacturers, employing $21,000,000 of capital, produced 26,601 machines, valued at $34,650,500, during the year ending June 30th, 1905, a large increase over last year, and comparing with a total output in the census year 1899, of all motor vehicles, of less than $5,000,000. Reports show that demand has been active, most manufacturers are pushed to keep up with sales, and that American manufacturers, having the trade in the smaller cars well in hand, are now competing actively with the larger foreign machines, and this country is exporting more in value than it imports.

---

"Are $50,000,000 worth of good roads worth $10 to you?" is the pithy form in which the advocates of New York's constitutional good roads amendment are asking for contributions for a fund to educate voters. In November next it will be decided whether the bond issue shall be authorized, and it is to prosecute a campaign of education that the fund is being raised. How much are 7,000 miles of improved highways worth to you?

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# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

FORDING SPENCER CREEK MO.

NOVEMBER 1905

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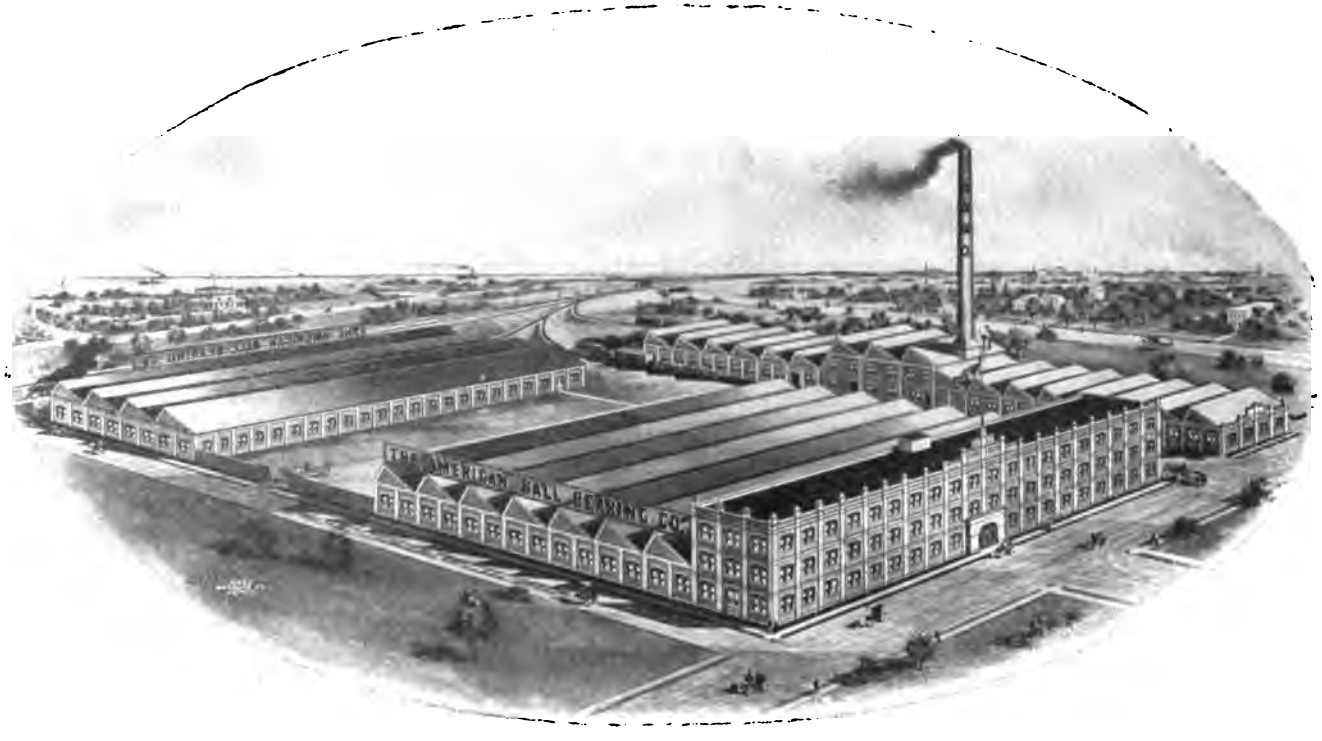


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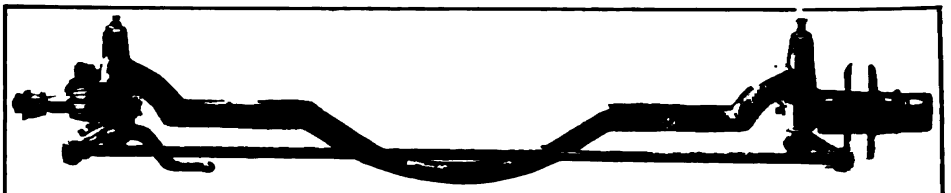

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AUTOMOBILING IN MADAGASCAR.—THE COMMANDANT'S DAUGHTERS.

# MOTOR TALK

A MAGAZINE OF OUTDOOR SPORT

VOL. I. NOVEMBER, 1905 No. 11

## The Automobile and the Cave Dweller

By Winthrop E. Scarritt, President of the Automobile Club of America

*From Shields Magazine.*

THE history of the human race is largely a history of cycles. Man's first home was a cave, the opening to which he closed with a huge stone to keep out the bear and the wolf. He next lived in the tree tops, where he could get more air and sunshine. Then he dwelt in rude huts, standing on poles over the water. The development of man has been an evolution of human wants and the means of their fulfillment. Life is no longer simple. Complex, competitive, strenuous are words we hear often. At first man indeed lived in caves; he has lived in many kinds of dwellings since, but the business man of today spends most of his working hours in a cave; for what else are our great modern skyscrapers but artificial caves? The cycle is complete, and the modern man, like the ancients, is a cave-dweller, but with this difference: The air he breathes and the water he drinks are much less pure.

The great physicians of the world are air, sunshine and water. In these busy, rushing, competitive days, how can these therap utic agents woo us to their shrine? The man of business, after a hurried breakfast, rushes down to his cave and is early at his desk. In a stuffy and often overheated office he breathes bad air and thinks and plans and toils till his vital forces have run down to a low ebb.

Finally the day's work is done, and the city man goes to his home, which is only a section in another cave, in another part of the city. He has an hour of leisure; what shall he do with it? Physicians tell us that walking is good exercise, but most of us find walking for the specific purpose of exercise dull and stupid work; consequently the afternoon paper or the latest novel combined with the attractiveness of an easy chair, smoking jacket and slippers, anchor us in the home when we should be out of doors.

Now comes the automobile, "the last, best gift of all the gods to man"; and to the man of sedentary life the motor car furnishes the ideal opportunity for outdoor enjoyment.

When the weary brained in city street has spent his vital force, let him step into his motor ca- and in 20 minutes the garment of care will fall from him, the cobwebs will be swept from his brain, the life-giving oxygen pumped into his lungs, the city streets spurned; and in country lanes, in field and forest the tides of life and health will set in again. The secret of recreation is to secure an entire change of the channels of one's thought and activity. The mind must not lie dormant; that is not rest. That is stagnation. The mental powers must be pleasantly employed and stimulated; the physical senses must be alert, but in a sphere of activity entirely remote from previous engagements. No means of recreation more completely fills these conditions than the automobile. Guiding the machine, listening to the throbs of the engine, observing, as you must, carefully, the conditions of traffic on the highway, with hand on the throttle, the slightest movement of which causes your car to bound forward with the strength of a score of wild horses; gliding through space with the speed of the wind, picking

up the miles and flinging them behind you much as a terrier shakes a rat, flings it over his shoulder and is ready for another. All this gives the elation and physical uplift which set the blood tingling in the remotest tissues of the body and make you sigh and say to yourself "This is worth while." What care you if the sunshine beats fiercely on you, or if the grime of dust and travel change your complexion to the stoker hue? You are out in the open with the red blood of health bounding through your veins and all nature is yours.

One says, "I never can give up my horse for the automobile. The automobile is a cold, dead thing of steel and wood. I love the companionship, the interest, the sympathy of the living animal."

Thus speaks the man who sees only one side of the shield and is entirely ignorant of the other. The motor car has as many freaks and whims and moods and humors as the horse, or a beautiful woman. It is not a dead thing; it is a very live one, and a man comes to love or hate it by turns, depending on its behavior. One often comes to have a sympathy and, indeed, a real affection for his automobile. The engine confidentially talks to its owner as they speed over the highway. He knows the language, and when all is well the car purrs and hums and sings as it bowls along the splendid country road in tones of happiness which cannot be misunderstood. There are other times when the engine spits spitefully, when there is an occasional mutter, then deep bass growls, and at last vigorous barks and sharp, explosive notes which indicate distress and possible peril, if the disturbing cause is not removed.

Yes, every motorist who has real sporting blood in his veins comes to know the language of his car. If he be a true sportsman and if he have a good car, they will soon understand each other, cater to each other's whims and moods and at last they will get on pleasantly together. How can one adequately describe the joys of a day in June, when a little company of congenial spirits sets out over good roads for the de- of the country, in a fine motor car? I must leave a description of this joy to the imagination and to a pen more eloquent than mine.

The fat and lazy Dr. Ben Johnson, lolling back in the luxurious upholstery of a London coach, driving at the then rapid rate of 12 miles an hour, said: "Life has few things more enjoyable than this."

ALONG THE PLEASANT ROADS OF SOUTHERN MICHIGAN.

What would the doctor say if he could ride in a modern motor car? The conditions of our 20th century life are such that the man of many cares and business responsibilities stays too much in the modern cave. His hours of recreation are so short that he must crowd into them, as he does in his business hours, much in a little time. The automobile solves the problem for this man. Its usefulness in this respect will be more appreciated as the years go by. Its only possible rival will be the practicable airship, and this is not yet in sight, although the perfection of the light, internal-combustion engine, which has made the automobile possible and practicable, will yet make the airship possible and practicable.

The automobile, under the pioneership of that good sportsman, James B. Dill, will soon become the ready and happy means of transporting the sportsman from city haunts to his favorite field or forest. Mr. Dill has made numerous trips into the heart of the Maine forests in his favorite car. He finds it not only useful and practicable, but the speediest and most comfortable way to make his journeys from place to place. Here, too, is a field for the motor car which will be appreciated more in future.

After all, the greatest field of usefulness for the self-propelled vehicle will be in the commercial world. We go on a pleasure trip when the weather is fine or go shooting or fishing as the mood seizes us, but the man who delivers our groceries or coal, or who comes from the laundry, must be on duty every day in the year; and when the American car has become standardized and is made in large numbers at low cost, so that it may be bought by "the butcher, the baker, the candlestick maker," then we shall see it occupying its widest and most permanent field of usefulness.

The wildest dreamer of us all has not yet begun to comprehend the important part the motor car is finally to play in our modern civilization.

AT THE FAMOUS MARK TWAIN'S CAVE.

# Winning the Vanderbilt Cup

## How France Won This Most Successful of Racing Events

*Illustrations courtesy Motor Age.*

THE second Vanderbilt Cup Race, chronicled by the press as "the most wonderful speed event ever held in America," has passed into automobile history, Hemery, a Frenchman, driving a Darracq car, winning the contest, which was held on Long Island, Saturday, October 14.

Lancia, representative of Italy, won glory, doing the most brilliant work. He would have been an easy winner but for his unlucky mixup with the Christie car. Tracey in the Locomobile did splenner of the fourth place, carried off the did work, giving America a place.

The following summary of the event, prepared by The Automobile, is extremely interesting and instructive:

Total distance covered from start to finish (no controls), 283 miles.

A REMARKABLE PHOTOGRAPH—FOXHALL KEENE'S COLLISION WITH A TELEPHONE POST AT THE PERILOUS "S" TURN.

Length of course (covered ten times), 28.3 miles.

Total elapsed time of winner, Hemery, 4 h. 36 m. 8 s.

Total elapsed time of second place winner, Heath, 4 h. 39 m. 40 s.

Total elapsed time of third place winner, Tracy, 4 h. 58 m. 26 s.

Hemery won by 3 m. 32 s.

Hemery's average speed per hour for total elapsed time, 61.49 miles.

Heath's average speed per hour for total elapsed time, 60.72 miles.

Tracy's average speed per hour for total elapsed time, 56.90 miles.

Fastest round made in the race was by Lancia, in the fourth round, 23 m. 18 s.

Fastest round made by any other driver was by Jenatzy, in second, 24.33.

Fastest round made by a French car was Hemery's fifth round, in 24.49.

Fastest round made by an American car was Tracy's fifth round, in 27.40.

Lancia's rate of speed in miles per hour in fastest lap, 72.88.

Hemery's rate of speed in miles per hour in his fastest lap, 68.42.

Heath's rate of speed in miles per hour in his fastest lap, 64.07.

Tracy's rate of speed in miles per hour in his fastest lap, 61.38.

Rate of speed in miles per minute in Lancia's fastest round, 1.4.

Rate of speed in feet per second in Lancia's fastest round, 106.8.

Most uniform performance throughout race was made by Hemery, the greatest variation in his rounds being 3m. 29s.

Greatest variation in Tracy's rounds, 5m. 13s.

Lancia held first place by elapsed time up to end of seventh round, when collision with Christie caused him more than three-quarters of an hour delay.

At the end of his sixth round Lancia was 26m. 4s. ahead of the nearest competitor, Keene, having gained more than

HEMERY, THE WINNER, IN HIS LITTLE 80-HORSEPOWER DARRACQ.

a full lap on the entire field.

Excluding three rounds in which he had tire trouble and collided with Christie, the greatest time variation in Lancia's remaining seven laps was 44 seconds.

Heath was 9m. 47s. ahead of Hemery at the end of the fourth round.

Lancia made four consecutive rounds (113.2) miles) at the average speed of 72.22 miles an hour.

Keene was in third place when he ran into telephone pole in his sixth round.

Keene's fastest round, the fifth, was made at the rate in miles per hour of 64.36.

Nazzari was in third place at the end of the eighth round.

All three American "substituted" cars were down and out of the race before the race was half finished.

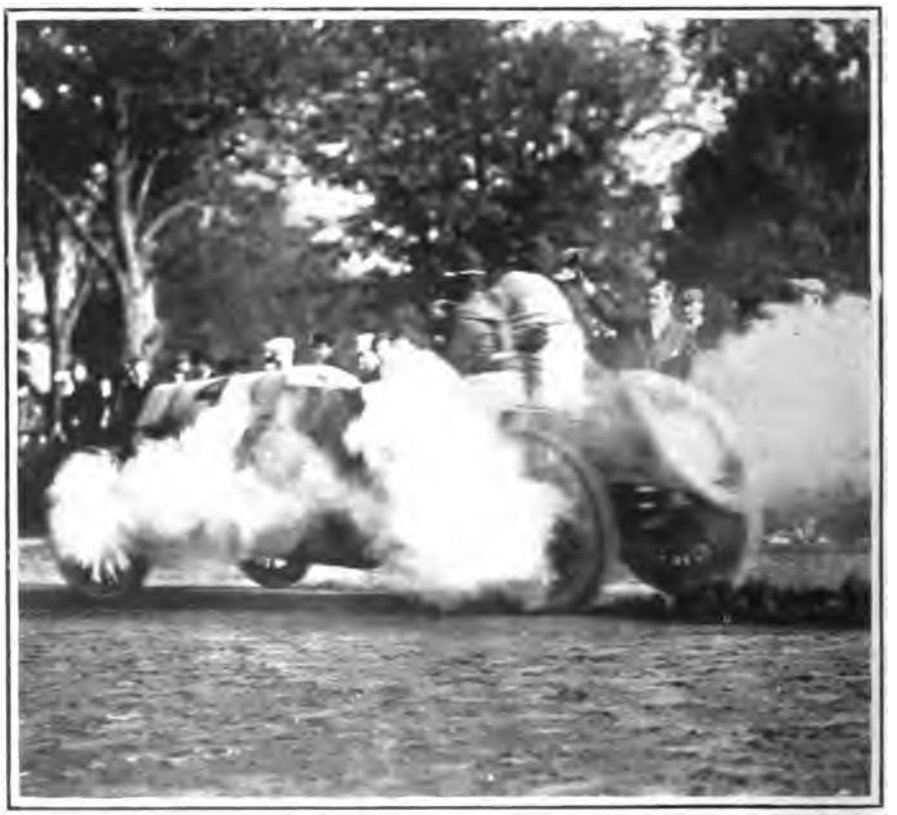
Cars that finished or were still running when the race was called off: Darracq (Hemery), Panhard (Heath), Locomobile (Tracy), Fiat (Lancia), Pope-Toledo (Dingley), Mercedes (Warden), Renault (Szisz), De Dietrich (Duray), Fiat (Nazzari).

Countries represented by place winners and their order; France, first and second; America, third; Italy, fourth.

Cars that were out of the race when it was called off: Mercedes (Jenatzy); Mercedes (Keene); Darracq (Wagner); Christie (Christie); Fiat (Cedrino); Mercedes (Campbell); Pope-Toledo (Lyttle); Fiat (Chevrolet); White (White); Fiat (Sartori).

Cars representing different nations that had finished or were still running when race was stopped: France, 4; United States, 2; Italy, 2; Germany, 1.

Cars representing different nations that were out of the race when it was called off: France, 1; United States, 3; Italy, 3; Germany, 3.

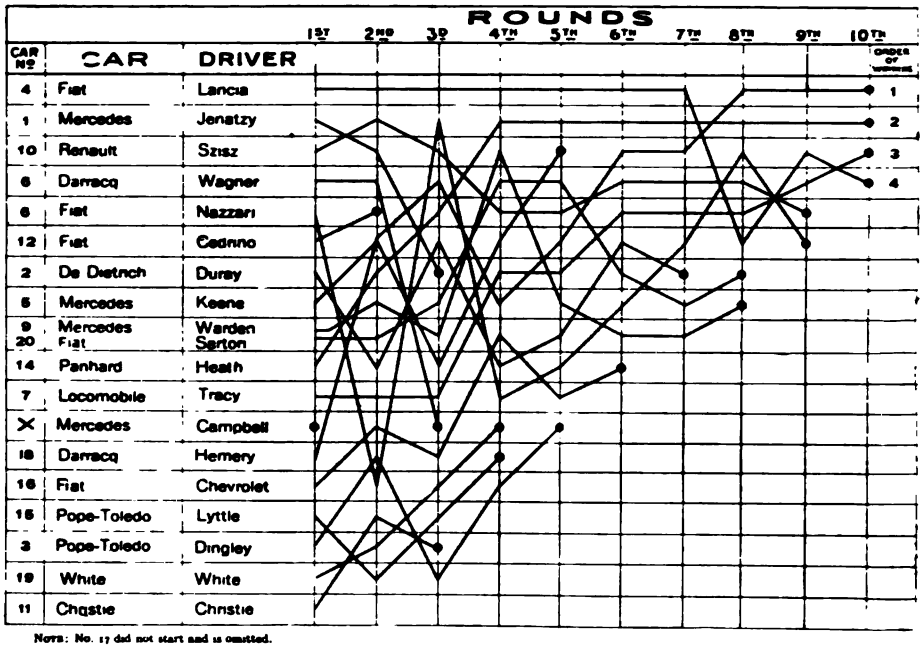


LANCIA, THE FAVORITE, GOING AT NINETY MILES AN HOUR.

LANCIA'S BIG FIAT AT THE TAPE—READY FOR THE START.

HEMERY'S DARRACQ, STRIPPED FOR ACTION, AT THE STARTING LINE.

**DIAGRAM SHOWING POSITIONS OF CONTESTANTS AT END OF EACH ROUND PLOTTED FROM OFFICIAL ELAPSED TIMES.**




NOTE: No. 17 did not start and is omitted.

EXPLANATION: The lines in this diagram have relation only to time and have nothing to do with numerical starting position or order of passage. Figured on elapsed times all contestants are assumed to start together; therefore, as they can have no relative positions until the first round is completed, the names of the contestants are arranged in the order of their positions by elapsed time at the end of the first round. It will be noted that Warden and Sartori appear together in one space. This is due to the fact that both ran the first lap in the same time and were tied. The same applies to Keene and Hemery at the end of the second round. Campbell made only one round, at the end of which he was in twelfth place, and consequently is not represented by a line.

# Maxims for Automoblists

*From Town Topics.*

It is a good auto that bodes no man ill.

It is nicer to hitch your wagon to a star than to hitch your car to a wagon.

Money frees the route of all evil.

Once a man blew his own horn in his vanity; now he bloweth it in his auto—yea, also is he hailed wise.

Hide not thy light under a bushel, or thou wilt find thyself in a peck of trouble.

Autos, alas, may not be counted as "blessings without number."

Where wigs are found amiss, 'tis goggles that disguise.

Smell is braved with good inventions.

A necessary repair is like a needle in a haystack.

Pay up stoically, but do not hope to find it.

Of thy chauffeur tell the truth; it won't shame the devil.

A pleasant ride is termed a spin and not infrequently is a yarn attached thereto.

Uneasy should lie the head at which swears a town.

Always too slow for the chauffeur, no matter how rapid the pace;

Always too fast for the public, who consider two autos a race.

Where there's a bill there's a way.

The chauffeur's maxim: "Better never than late!"

Blessed be the pace-maker, for he shall ride in no man's dust.

A well-tired auto is like a well-attired woman; nor do its fashions change less often.

A tonneau is a tight squeeze surrounded by leather.

Little ditches cause big fears.

An auto that rattles is like a fool that prattles; an abomination to the soul, and a vexation to the ear.

A rolling stone corrupts good manners.

If a passer-by console thee with "Get a horse," smile upon him; but remember to get his in thy next "mix-up."

More fatal is a loose tire than a tight chauffeur; also thou mayst make way for the latter, but the former may only make way with thee.

# The Automobile in Industry

## Telling of the Rapid Development During the Past Season, Especially in the Commercial Line

*H. Olerich in World's Work.*

IN 1899 there were only fifty motor cars in the United States. There are now probably more than 60,000, and all the leading countries of the world are turning them out with remarkable rapidity. France last year exported more than $14,000,000 worth; Germany more than $3,000,000; and the United States nearly $500,000 worth. But the increasing uses to which the various styles of automobiles have been put during the last few years are even more important than the increase in the number of them. In this article no effort is made to explain all these uses, but especial attention is given to the traction automobile used for farming and freighting purposes. The ordinary passenger use is yet perhaps the most important, but what may be called the industrial work of the motor car may outstrip its passenger-carrying work.

In the large cities, where roads are good and electric current is accessible, the electric truck is rapidly superseding the dray horse. It is cheaper, more convenient, more efficient, more humane, and much more cleanly. Some of the large trucks now in use for freighting purposes have a capacity of ten tons, more than was formerly loaded in a railroad car. Most of these electric freight trucks are equipped with convenient electric hoists for loading and unloading heavy articles. They thus greatly reduce the toil of man as well as of beast. Most of the heavy freight trucks are run with electricity from storage batteries; but in the smaller places gasolene freight trucks are rapidly coming into use.

The delivery automobile is as useful

AUTOMOBILING IN CALIFORNIA.

and convenient as the truck for freighting purposes. Both the electric and the gasolene types are used. Enterprising merchants are substituting them for horses and wagons. Express companies use them for delivering express matter; in some places they are used for delivering mail; and, under fair conditions, they everywhere seem to perform their work with convenience and efficiency. This use will become more general as suburban roads become better and power stations more numerous.

Fine open as well as enclosed automobile omnibuses and wagonettes are used in many of the large cities. Most of them are electric machines, well finished and easily operated. Some are for public and some for private use, and they seem to give satisfaction wherever tried.

London is the leading 'bus-using city in the world. It is estimated that it has about 2,550 horse omnibuses. During the last few years a number of automobile 'buses have been introduced there, and their service is so satisfactory that some of the large omnibus companies are already considering the substitution of automobiles for horse omnibuses. Such a fact gives a hint of the enlarged use which awaits the automobile.

This class of automobiles is not only taking the place of the horse omnibus, but it is beginning to render valuable service in the territories of the trolley car and the suburban train. Transfer companies are already operating automobile 'bus lines from large cities to suburban districts, and between certain towns that are not directly connected by railroad or by trolley car. In other cities, where the street-car service is deficient, the automobile 'bus is beginning to supplement it and horse vehicles. A well-equipped automobile 'bus line has many superiorities over the trolley car, the suburban train and the horse omnibus. A railroad or a street car line always mars the neatness and disturbs the quiet of any street on which it runs. The posts, the network of wires and other fixtures of a trolley system make the streets look unsightly; and they are, too, more or less dangerous. Automobiles require none of these objectionable fixtures. They are at home on a smooth asphalt street, a beautiful boulevard, or better still, on a steel-plated thoroughfare. Rubber-tired automobiles speed along almost noiselessly. Trains and street cars can travel only on their iron rails, while automobiles can turn off upon any street.

As compared with the horse omnibus, the automobile 'bus is faster, more humane, and much more cleanly. It has no refuse of the stable and leaves the traveled streets much cleaner and more beautiful than the horse, and the paving would last much longer with the automobile travel than it does with vehicles drawn by animals. For these reasons all vehicles drawn by draught animals are debarred from certain fashionable streets in some cities.

But of all the uses to which the automobile has thus far been put, perhaps none is more interesting than its traction use to pull heavy loads. Long trains of heavily loaded freight trucks now run on common highways, or where there is no road at all; and enormous farming implements on the loose cultivated fields are propelled by motors. Some may prefer to call these traction vehicles engines instead of automobiles, but the term automobile is much more definite and appropriate. It means a self-moving vehicle, adapted for running on the ground without rails or a specially constructed track. The locomotive is a traction engine, but not an automobile, because it requires a special track.

The prodigious amount of work which these large freighting and farming machines accomplish is almost incredible. For instance, a 110-horsepower machine plows, sows and harrows, all at the same time, a strip thirty feet wide, at the rate of three or four miles an hour, turning over the soil at the rate of eighty acres a day; or, under favorable conditions, ten or twelve acres an hour. It thus performs work which ordinarily requires forty or fifty teams and men.

There is a harrowing machine that reaches one hundred feet wide, capable of harrowing 300 acres a day, or thirty acres an hour, and no one has to walk in the loose soil behind the harrow or whip a tired team. It harrows a whole section of land in a little more than two days. Special gang plows that plow eight or ten inches deep, disc harrows that pulverize the tough sod, press drills that plow nine inches deep and seed at the same time, are all successfully operated with these powerful traction automobiles.

When the grain is ripe the harvesting is done on a still larger scale. Ponderous combined harvesting and threshing machines, drawn by automobiles, cut, thresh, clean, and sack the wheat, all at the same time and almost without human effort, from 100 to 125 acres of grain per day. The "cut" of the sickles is from

AUTOMOBILING IN SALT LAKE CITY.

thirty to fifty feet. The harvesting machine elevates the cut grain to the cylinder of the thresher, which threshes and cleans it, as the machine travels over the field; and on hillsides of moderate steepness it can be so adjusted that it works almost as well as on level ground. Such are a few examples of the great service which the traction automobile, under favorable conditions, already renders to large Western farmers.

For logging, lumbering, and other heavy freighting purposes, the traction automobile proves itself as efficient and convenient as for extensive farming. This kind of motor performs tasks fit to be compared with the labors of Hercules, and it saves enormous expense. The reader must remember, however, that these large freighting and farming machines cannot be used with advantage everywhere and under all conditions. For instance, on very hilly land, or in fields full of stumps and stones, or on small patches of land, they are impracticable. To utilize them the fields must be moderately level, fairly well adapted for agriculture, and in quite large tracts such as the extensive level fields in many of the Middle and Western states, particularly in the great wheat belts.

But it is not necessary that all automobile farming and freighting should be done on such a large scale. Where the land and the roads are not adapted for ponderous machines, smaller ones can be used with advantage, after the farming and freighting automobiles are once brought into general use.

In favored places farming in the near future will no doubt consist principally of automobile riding, which can be performed by women as well as by men. The farmer, sitting in his comfortable cab, hitches his motor to the large plows, wagons, harrows, seeders, self-binders, headers, cultivators, corn and potato planters, or any other farming implement that he wishes to operate. When he finds it too cold, the electric current can warm his cab; when too dark, it can light it. Under these improved social and industrial conditions, which the automobile is so prominent in helping to bring about, the occupation of farming will be elevated to that high dignity which it deserves, for all wealth—food, clothing, shelter, and luxuries—must be produced directly or indirectly by the application of labor to land. How rapidly the automobile is helping to reduce the toil of man and beast is thus strikingly suggested.

How successfully gasolene may be used for heavy traction purposes is demonstrated by the recently constructed gasolene motor car, the first of its kind, which was turned out of the Union Pacific shops at Omaha last March. This railroad gasolene motor car was originated by Mr. E. H. Harriman, and was built under the personal supervision of Mr. W. R. McKeen, the superintendent of motive power and machinery of the Union Pacific Railroad. Its efficiency has been tested and its service found so satisfactory that the company is now building more, which are to be operated on various branch lines of this railroad system. The new cars will be much larger than the first one. Besides baggage and toilet compartments, every car will have accommodations for fifty passengers, and the maximum speed is equal to that of the ordinary passenger train.

All these beneficial improvements have, however, sprung up so rapidly during the last few years that only those who take the time specially to investigate them know how rapidly changes are taking place.

For hill climbing the automobile has no equal. At Eagle Rock, N. J., the winner in the hill-climbing contest ran a mile on a road having an elevation of about 15 per cent. in one minute and twenty seconds. A well built automobile of high power on a good road goes up hill almost as well as it goes down.

In Texas and a few other grazing states the automobile is taking the place of the cow pony. Not a few large cattle owners are using it for herding. It runs over the prairie with a wonderful speed, and the cattle soon learn to heed its toot.

As a racer the automobile has no rival. From a slow beginning, in a few years it reduced the world's mile record to thirty-two and four-fifths seconds. This is, no doubt, faster than any animal ever ran, and faster than the schedule time of any express train. Although not important in the use of the automobile, this remarkable speed is one of its greatest marvels.

The automobile too has numerous advantages over any mode of conveyance, and if rightly planned and executed, automobile touring is one of the most fascinating, healthful, and instructive outdoor sports.

Thus we find the automobile has recently entered practically every important field of industry and pleasure where vehicles are used, and has proved itself wonderfully useful in every one of them. It is certainly already a success, and how long a list of other important uses and improvements the future will show no one can predict.

ON THE ROAD AT SUNRISE—*Courtesy Motor Way.*

# Passing of the Stage

## How the Automobile is Rapidly Supplanting Old Methods of Passenger Transportation

*From The Automobile.*

PROMOTERS of electric railways and others interested in the transportation problem are watching with a great deal of interest the results of an experiment being made in Springfield, Ohio. It represents one of the first attempts made in the country, and certainly the first in this central district, to supplant the trolley line with the automobile. It has long been one of the acknowledged problems in the electric railway industry to take care of the requirements of small towns lying five to twenty-five miles off from a main line; districts which are enterprising and demand better transportation facilities than are afforded by teaming, but in which the population is not sufficient to warrant the building of the electric road with its expensive right of way, grades, track, overhead and power equipment. Even the cheapest forms of such lines cost from $15,000 to $25,000 per mile to build, and long experience has shown that a territory must have a tributary population of from 400 to 800 per square mile to make it remunerative. With less than this population such a road is almost sure to fail, unless the terminal cities are very large.

The question of whether the automobile will take care of the less populated districts is being tested out in Springfield in a thorough manner, and it is interesting to note that the people who have invested their capital and pinned their faith to the enterprise are not experienced automobile enthusiasts. As a matter of fact, they knew very little about automobiles when they went into the enterprise; they are experienced electric railway operators and promoters. A number of small towns within a radius of twenty-five to thirty miles of Springfield wanted the advantages of better transportation facilities. Attempts to project electric lines to these points failed because of lack of financial backing due to the small population. After studying the situation thoroughly, it was decided to try the automobile. The Commercial Transit Company, of Springfield, was formed with $50,000 capital stock. Prominent among those interested are John S. Harshman, who was president and promoter of two of the leading traction lines in this district; E. B. Gunn, suprintendent of the Springfield city lines, and R. Torrence, a traction line promoter.

They started on a modest scale, buying three standard Olds twelve-passenger 'buses and ordered two cars of a larger type to seat eighteen. The route selected for the first venture was over the Jamestown Pike, which passes through Clifton, Cedarville, and Jamestown, the latter point being twenty two miles from Springfield. Clifton has about 500 population, Cedarville about 1,500 and Jamestown about 2,500. None of these towns has direct railway connection with Springfield, a city of 30,000 and the natural center for this district. The highway is fairly level, with hard gravel surface, and it is usually in excellent condition all the year around.

The company spent about $1,200 in filling holes and low places with broken stone, leveling and rolling the entire road with a steam roller and strengthening some of the culverts, the idea being to improve the road in every way possible for its own convenience as well as to gain the good will of the country people, who at first were rather antagonistic to the proposition. The company also made an agreement with the county commisioners of the two counties through which the line passes to spend $100 a mile per year on road improvements, the commissioners to do the same. This was purely voluntary on the company's part, as there is no law in Ohio to prohibit the use of the highway for such purpose or to compel the company to make any special payment for the use of the road. In one of the counties the commissioners were inclined to hold the company up for special concessions, but spirited action, failure to find laws on the

subject, reference to old stage coach lines, and especially the company's inclination to do the right thing, soon won them over. The company may, however, be compelled to pay special automobile licenses in cities where there are ordinances.

It is the intention to live up to the state automobile law which restricts the speed to fifteen miles an hour in villages and eight miles an hour on business streets of cities.

The schedule laid out provides for one hour and fifty minutes for twenty-two miles or about twelve miles an hour. Thus far there has been no difficulty in maintaining this schedule, despite the fact that unusual precautions are being taken to avoid scaring horses. Farmers at first were inclined to be very antagonistic to the venture on this account, and every effort is being made to win them over, as the success of the enterprise depends largely on the patronage. Operators are instructed to hold strictly to the state law, which provides that an automobile must give a team two thirds of the road and if the driver of a horse raises his hand the machine must be brought to a stop. If the horses are still inclined to be fractious, the motor must be stopped. This, of course, necessitates getting out to crank the machine again and the loss of time by reason of such incidents has been considerable, but this disadvantage is becoming less and less, and after six weeks of operation the farmers are coming to the conclusion that the line is a good thing for them and that it is cheaper to patronize it than to hitch up and drive to town. This will become more apparent during wet and cold weather. The rates are reasonable, being based on 2 1-2 cents a mile; 50 cents for the twenty-two miles, or 95 cents for the round trip to Jamestown.

The ride is especially pleasing in good weather, and it is safe to say that many citizens of Springfield and many strangers who visit that city will take the trip for the enjoyment there is in it. The country is slightly rolling, with long grades at the tops of which one can see for miles. The villages are quaint and old-fashioned and there are many negro cabins, so that one almost imagines he is in the South. Tobacco and sugar cane, which are quite plentiful, serve to increase this delusion. Clifton, noted for its high cliffs and beautiful scenery, promises to become more popular than ever as a pleasure resort since the opening of the line.

Thus far the cars have given good serv-

CUMBERLAND GAP, VA.—COURTESY THE AUTOMOBILE.

ice, and, although they are light for such work, it is believed they will stand up. They have vertical double cylinder motors rated at 16 horsepower, water cooling system, two speeds forward and reverse with maximum speed of eighteen miles an hour, and 30-inch wheels fitted with Firestone solid rubber tires. They have canopy tops with side curtains and swinging window in front. The operating company has made several slight changes in the cars, installing small electric lamps in the top and an electric headlight, current being furnished by a battery in connection with an Apple generator which also furnishes current for engine ignition. Celluloid windows will be placed in the curtains so that the cars will not be dark in stormy weather, and it is planned to run the engine exhaust pipes under the seats for heating the cars in winter.

Under the present schedules two cars handle the service, one making two and a half round trips or 110 miles a day, and the other 88 miles or two round trips. There is a short layover between most of the trips and each car lays up every third day. The cars are inspected and cleaned every day. They have been averaging 4 1-2 to 6 gallons of gasolene for a round trip of 44 miles and about 2 1-2 to 3 pints of lubricating oil. An allowance of two cents per mile is being made for repairs, which thus far has been practically nothing. It is thought the cars can be operated for from 4 1-2 to 5 cents per mile as compared with 13 to15 cents per mile for electric cars. Operators are paid 25 cents an hour, and they of course attend to the collection of fares. Thus far, as a business proposition, the project has proved most encouraging; in fact, it is claimed to be self-sustaining already. If business improves, larger cars will be placed in the service, and it is probable that a truck will be operated over the route to handle produce and other freight.

As soon as possible another line will be started over a route north from Springfield, conecting Mechanicsburg and other towns. It is possible that the present route may be extended to connect Jamestown with Xenia, the county seat. The company also expects to operate 'buses in Springfield for private parties and excursions to nearby resorts, charging a rate of $5 an hour for the cars.

For garage and headquarters, an old building was leased and rebuilt to give it a handsome and substantial appearance. There are waiting rooms, ticket office and general office in front. In the rear there is a repair shop, charging plant for electric vehicles and batteries, inspection pits and machine tools for taking care of all classes of repair work. A general garage business is to be conducted and the establishment will be the most complete of the kind in Springfield. It is located a few doors from the main street of Springfield, which is the old national turnpike that is traversed by many tourists. Altogether, this proposition furnishes food for thought for promoters in many districts where there are similar opportunities.

A ROUGH AND RUGGED ROAD.

# The How and Why of the Automobile

A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from October issue*)*

## CARBURETORS—(Continued.)

ONE could write page after page describing modern forms of carburetors, but as it is the intention of the writer simply to give some of the principles governing their construction he will not take the space to go into a detailed description of the various forms. The accompanying cuts will show slight differences in design, yet the same underlying principles will be found in each. Nearly all of the carburetors shown on the following pages are of foreign make, and many have become famous on account of their great adaptability.

**FOREIGN CARBURETORS.**—The Daimler-Phoenix carburetor shown in Fig. 47 illustrates a type in which the gasoline is allowed to strike a conical

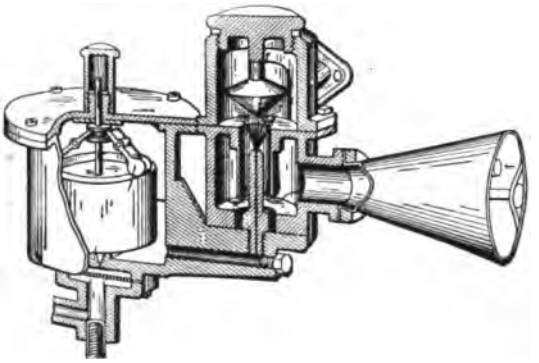


FIGURE 47.—DIAMLER—PHOENIX.

surface just above the gasoline jet. Such an arrangement causes the gasoline to be spread out in a thin mist through which the incoming air must pass, thus insuring more perfect vaporization of the gasoline.

In the Richard-Brazier, two gasoline nozzles are used and are placed in such a position that only a portion of the air passing into the motor will pass the jets. Fresh air comes in at the bottom, as indicated by the arrow, at C, passes the jets GG, the supply of gasoline being, at these points, controlled by float F, and up through the passage M, where warm air may be added through openings at SS.

The Napier carburetor presents one new feature, that being the horizontal piston actuated by the governor. The gasoline in this carburetor passes

*This valuable series began in the March issue, back numbers will be sent upon receipt of regular price.

through the filter chamber C up into the float chamber G, and from it is fed as needed into the mixing chamber of the carburetor. The main air inlet is shown at H 1, the air passing through this opening strikes the gasoline jet at K, and immediately forms a mechanical mixture with the fuel. From here it

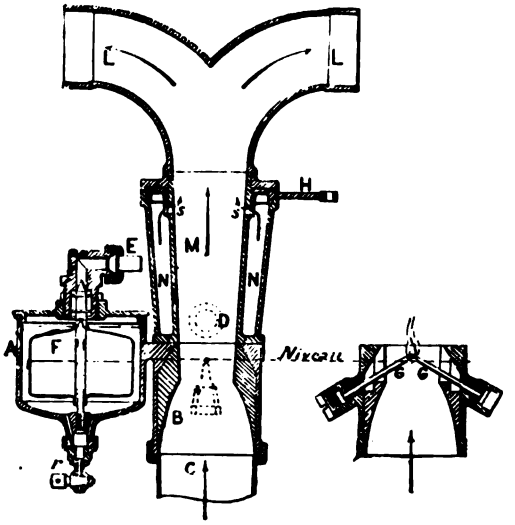



FIGURE 48.—RICHARD-BRAZIER.

passes through holes in the piston J 4, and out into the inlet pipe J 2. This piston, J 4, is connected with the governor of the engine, and acts as a throttle for the motor, increasing or decreasing the speed automatically as required. by cutting off or opening the passage leading into the inlet pipe. A hand

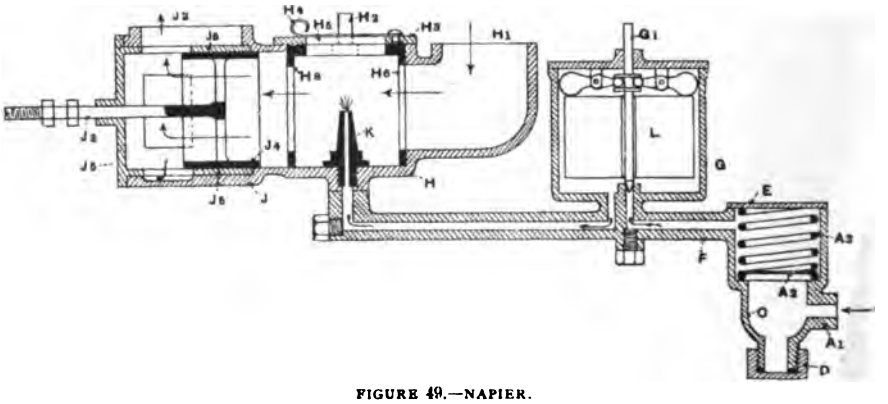



FIGURE 49.—NAPIER.

throttle is also provided, and may be operated by turning the pin H 2.

Another rather interesting type of carburetor, used on the Decauville car, is that shown in Fig. 50. In order to vary the amount of air passing through the mixing chamber, a cone mounted upon a vertical spindle, T, is placed in

the passage in such a manner that by raising and lowering the rod the area of the air opening at the gasoline jets may be varied in proportion to the speed of the motor. It will be very easily seen that at the time of starting only a small amount of air is allowed to pass into the motor, this of course, giving a rich mixture. On the other hand, when the engine speeds up, the lever, I, may be made to raise the cone up into a position which will allow a large amount of air to pass through. This carburetor is equipped with a

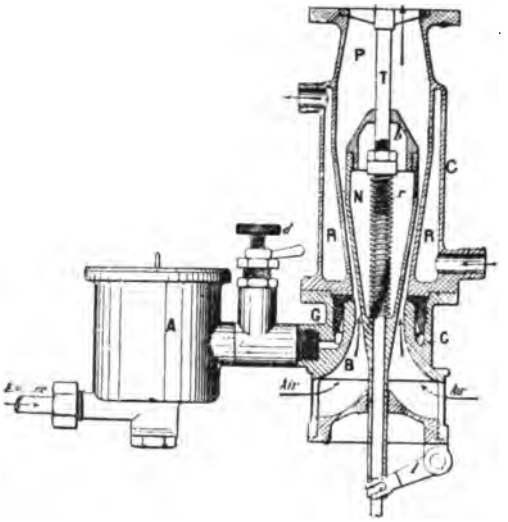



FIGURE 53.—DECAUVILLE.

hot water jacket, R, which is very often applied to carburetors in order to facilitate the vaporization of the fuel. In cold weather this arrangement is often very advantageous. Many carburetors, however, do not use this device, but depends upon taking the air from around some heated portion of the motor. Frequently the inlet and exhaust "headers" are cast together in such a way that the incoming air must pass along the heated surface of the exhaust pipe before entering the carburetor proper.

The Gobron-Brillie carburetor, shown in Fig. 51, is very similar in construction to the carburetor just mentioned except that it has a small umbrella shaped member which slides up and down upon the outside of the gasoline nozzle. By means of the lever, K, which operates the sliding member, the area of the passage around the gasoline jet may be increased or decreased at will, thus varying the proportion of air as conditions warrant.

Another very well-known foreign carburetor is shown in Fig. 52. There are several items of interest in this carburetor. The gasoline as you can see, rises up through the tube, D. Here it is met by the incoming air entering the pipe, A, and carried on into the motor, through the pipe, J, a sliding piston, attached to the governor, regulating, however the amount used. When additional air is desired the suction created causes the small piston, K, to

descend. In doing so, ports M, in the side of the wall, are opened, and additional air is drawn in, the amount depending upon the position of the piston.

Figs. 1, 2 and 3 show three positions of the piston. 1, the closed position; 2, showing the ports partially opened; and 3, representing the piston at its lowest point of travel, with ports wide open. The piston is controlled by a spring and diaphragm in such a manner that the upward and downward movements are comparatively gradual and no chattering effect is noticeable.

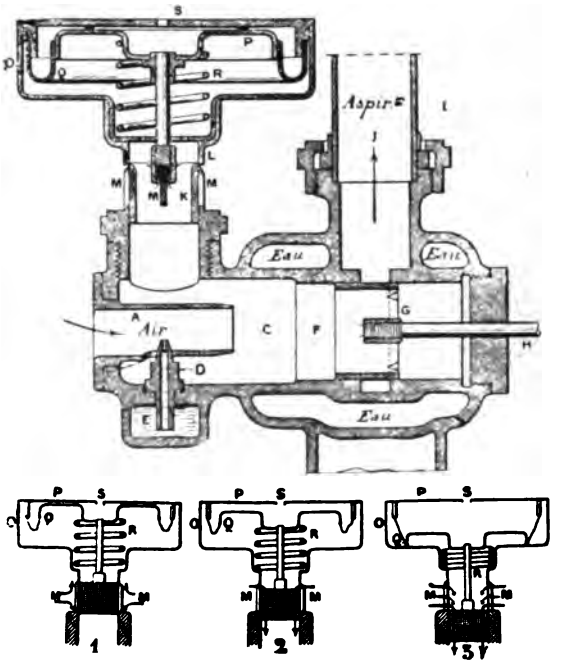



FIGURE 52.—KREBS.

**ALCHOHOL CARBURETORS.**—Many attempts have been made to design alcohol carburetors, and some inventors have been fairly successful. All, however, are very much alike, the greatest difference being in the arrangements for heating the mixture. Many of the alcohol carburetors are built in such a way that both gasoline and alcohol may be fed through the same mixing chamber. The motor may be started on gasoline, and the temperature of the cylinder raised to a sufficiently high point to vaporize the alcohol when this fuel is used.

One very common type is made with two float chambers and two fuel nozzles so arranged that in starting the explosive gas may be drawn from the gasoline slide first, and later on, when the alcohol is to be used, a small valve in the mixing chamber may be shifted in such a way as to allow the gasoline

to be entirely shut off, and the alcohol introduced. The principal trouble with alcohol is that it is rather hard to vaporize, and therefore nearly all of the so-called alcohol carburetors contain some device for utilizing the heat

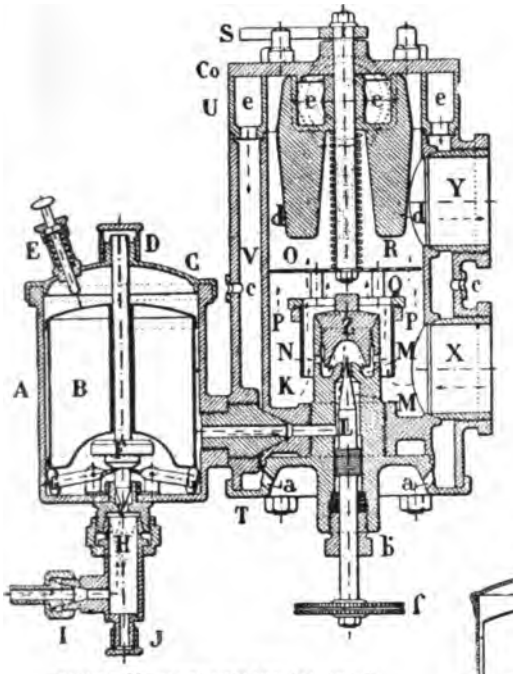



FIGURE 53.—LONGUEMARE (ALCOHOL)

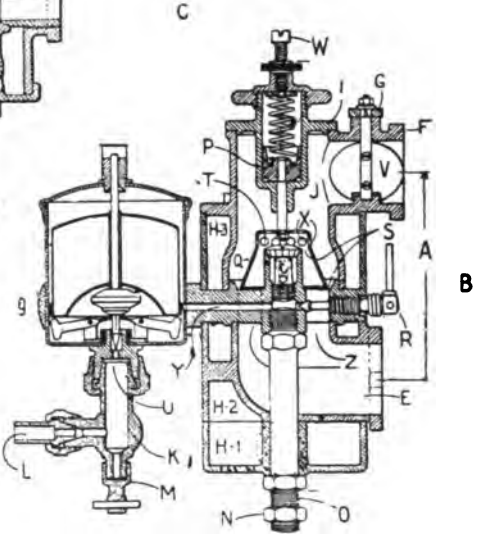



FIGURE 54.—KING (KEROSENE.)

of the exhaust gases or cooling water to assist in the vaporization of the fuel.

Kerosene and heavy oil carburetors differ from the regular vaporizer in that a provision is made for heating the fuel by means of the exhaust gases or from some other external source, so that the oil will be raised to a sufficient temperature to insure an accurate mixture. If this is not done the oil is liable to "crack" or decompose and leave a deposit on the inside of the cylinder wall.

*(To be continued.)*

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## Among the Clubs

A club exclusively for women is the latest thing in San Francisco motoring circles. At a meeting held recently a number of enthusiastic women drivers formed the Women's Automobile Club of California. Those present decided not to allow the men even to participate in the club runs. The following officers were elected: Preseident, Mrs. Alfred J. Marsh; vice-president, Mrs. Fred Linz; secretary and treasurer, Mrs. J. Gabriel. Dues of $1 per month will be charged all charter members and after the charter is closed an initiation fee of $2.50 will be exacted, and the dues will be reduced to 50 cents.

Plans for an enlargement of the sphere of usefulness of the Milwaukee Automobile Club are well under way. Sherburn M. Becker, one of Milwaukee's wealthiest young men, a member of the city council and one of the most enthusiastic motorists in the city, has been chosen president. The other officers of the club are: First vice president, Dr. Louis Fuldner; second vice president, F. G. Curtis; secretary, James T. Drought; treasurer, William H. Pipkorn. S. M. Becker, James T. Drought and Dr. Louis Fuldner were chosen as directors for three years; W. H. Pipkorn, F. G. Curtis and H. H. Rice for two years, and Dr. Lewis Sherman, J. R. Barthelet and C. I. Drake for one year. For the winter season a series of meetings is planned, at which papers or lectures on the automobile, its care and management, and similar topics will be given by recognized experts in their various lines.

The annual meeting of the A. C. of Maryland for the purpose of electing officers was held recently at the Hotel Altamont, with the following result: W. S. Belding, president; Richard J. Leupold, vice-president; George S. Dickey, secretary, and Ernest J. Knabe, Jr., treasurer. All of the officers of last year were re-elected except Secretary C. Warner Stork.

An automobile club has been formed at Waukegan, Ill. The club is officered by R. H. Morrow, president, and W. J. Smith, secretary. The initiation fee has been fixed at $5 and the annual dues $10. The membership reaches about forty. If the membership of the club keeps on increasing a garage will probably be opened in the near future. The roads have been good and the autoists have been accorded fair treatment on their tours through the adjacent territory.

Joseph H. Francis, president of the Austin, Ill., A. C., is agitating for the formation of automobile clubs in all the outlying suburbs of Chicago, his plan being to affiliate the various clubs, so that members will be able to make short runs in any direction with the promise of rest and refreshment at the terminals.

At least $10,000 will be spent by the Portland, (Ore.) A. C. in converting the best roads into dustless and mudless driveways. That oiled roads are the best the members are convinced, the experiment of oiling having been tried on the Linnton road.

The Colorado A. C. has recently compiled a new set of automobile regulations for presentation to the city council. According to these it is unlawful to leave an automobile standing alone, with its engine running. A vehicle turning into another street to the right must turn the corner as close to the curb as practicable. A vehicle turning into another street to the left must leave at least 15 feet clearance between itself and the left hand curb, or sufficient space for teams to pass without hindrance. For violations a fine of not less than $5 and not more than $100 may be imposed, or ten to sixty days in the city workhouse.

The nominating committee of the Chicago A. C. appointed by the board of managers for selecting a list of candidates for officers and directors of the club have announced the following ticket: For president, John Farson; for first vice president, Allen S. Ray; for second vice president, B. H. Marshall; for secretary, Sidney S. Gorham; for treasurer, T. J. Hyman; directors, Ira M. Cobe, Robert, Robert Tarrant, Jr., F. C. Donald, Jerome A. Ellis, Charles E. Gregory, N. H. Van Sicklin; nominating committee, W. G. Lloyd, Donald A. Sage and Frank X. Mudd. Ten members of the club have offered their services and co-operation to the chief of police in the new crusade to fight automobile speeding.

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# MOTOR TALK

A MAGAZINE OF OUT DOOR SPORT

IN EAST AFRICA

DECEMBER 1905

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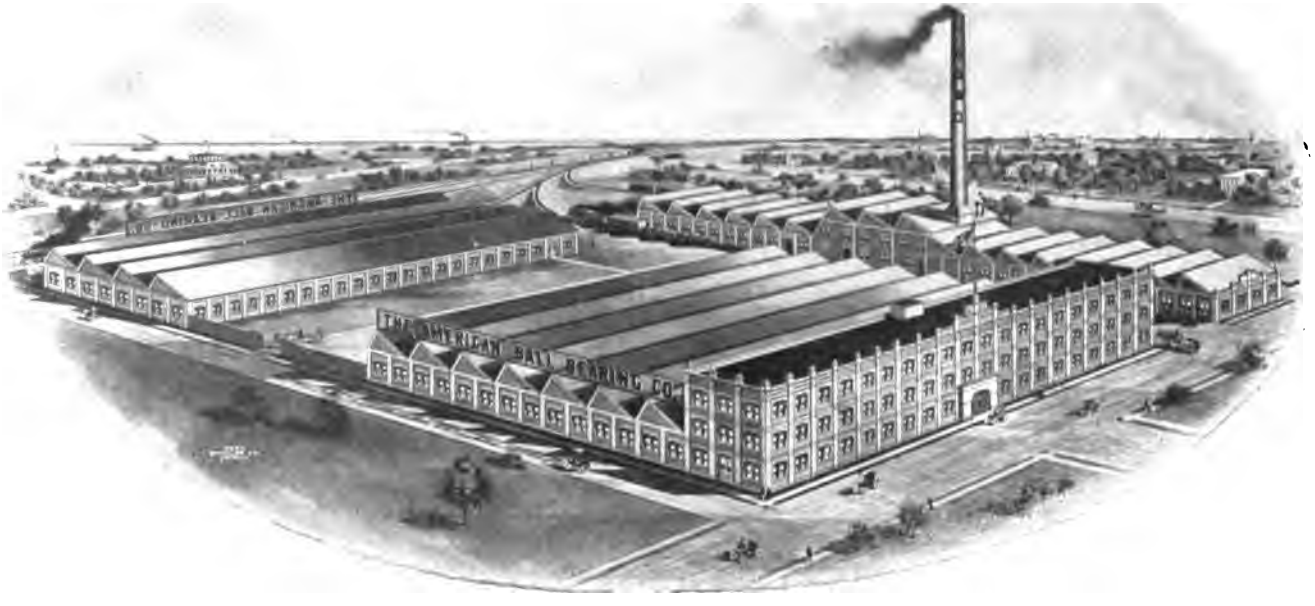


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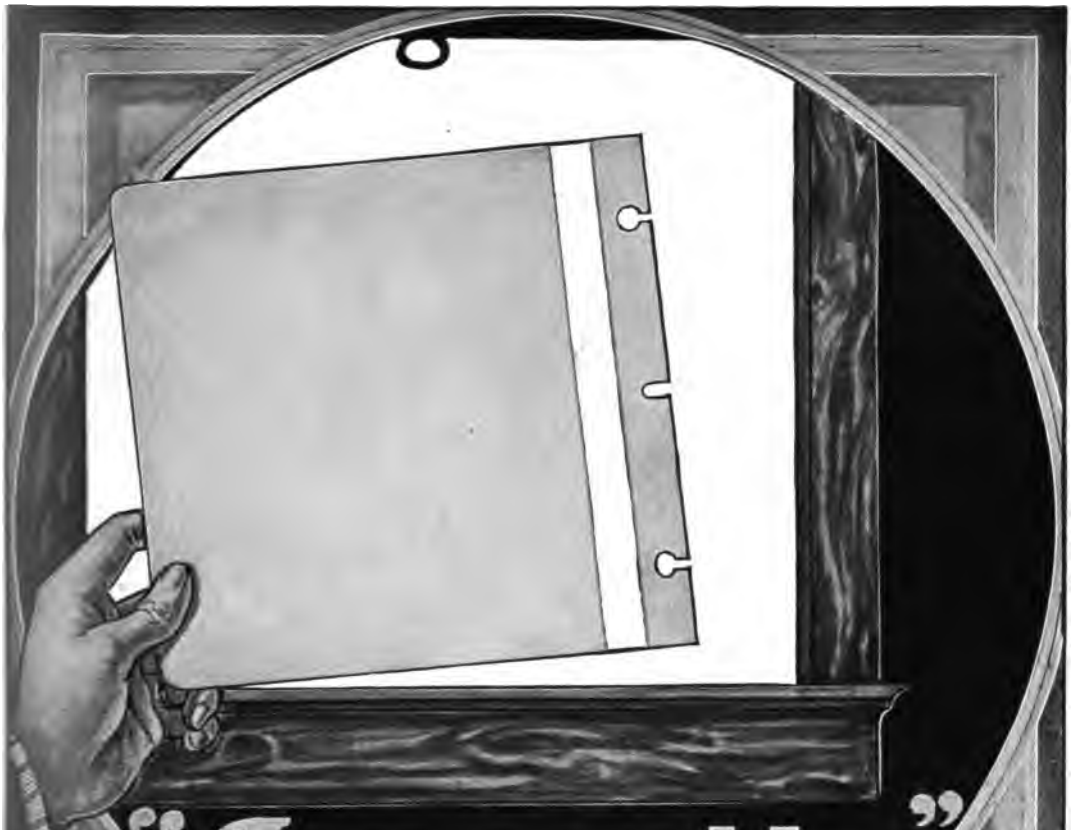

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MOTOR TALK

A MAGAZINE OF OUTDOOR SPORT

VOL. I. DECEMBER, 1905 No. 12

# What the Automobile Has Done for France

## Frank A. Munsey, the Well-known Publisher, Tells How the Motor-Car has Created a Vast New Industry

*From December Munsey*

IT is a pretty well-known fact that the automobile had its beginning, and in the first few years its chief development, in France, but just what the automobile means to France is little appreciated. It is known that every year a good many machines are manufactured and sold there, and at prices that must aggregate a good deal of money.

This, I should say, is about the casual way of thinking of the matter, if indeed, people think of it at all. But the manufacture of automobiles and the proceeds of their sale are insignificant as compared with the vast amount of money that in a thousand other ways is put into circulation in the French Republic by means of the automobile.

The output of automobiles in France has grown in eight years, 1898 to 1905, inclusive, from just under two thousand to over twenty thousand cars. And the best obtainable figures show that these machines brought about two millions of dollars in the former year and say fifty millions in the latter.

It is estimated that there are today employed in France, in one way or another, in the automobile industry and all that pertains thereto, including the care and repair of cars, more than two hundred thousand people. This number would include not only all those working on the construction of new cars, but those employed on the basic materials that enter into the construction, such as steel and brass and aluminum and copper and wood and leather, as well as those engaged in fashioning these products into the various parts for the automobile. Of chauffeurs alone a vast army finds steady work in France, for in a country where wages are much lower than in America almost every one who owns a car keeps a mechanician. In every garage, too, many men are employed in the cleaning and care and repair of machines. The repairing of machines is in itself a vast industry, calling for as much, if not more, labor than is given to the original construction of the automobile.

The motor-car, though light in construction, is put to a far greater test than the railway locomotive with its ponderous strength. The latter runs on a smooth, track free from abrupt turns and corners. Moreover, it runs on schedule time, and except in case of accidents is not forced to the sudden stops that in the very nature of the case rack and strain machinery. The automobile, on the other hand, has all kinds and conditions of roads, varying from the perfect macadam to the impossible and disgraceful. The starting and stopping, jolting and jerking, turning and twisting, running over obstructions and through sand and mud and water—all this necessarily puts the automobile to the severest mechanical test. Under such conditions, and allowing for the tremendous speed of the machine, express train speed in fact, the wear and tear and breakage in the usage of the automobile is and must be very great, and this strain is not alone on the machinery of the motor-car, but on the carosserie as well.

It follows naturally, then, that it must require a great army of workmen to keep these cars in repair. They not only have

to keep in condition the new cars that come out every season, but the great accumulation of cars covering many seasons; and the older the car, the more wear and tear it has had, and the more severe its usage the more work there is for machinists and carriage builders. To clinch this statement, lest it seem absurd that approximately as many men should be employed in the repairing of cars as in the manufacture of them, one must take into consideration the great excess of cars in use over the annual production of new cars.

It has been impossible to get anything like accurate statistics on this repair feature of the automobile business, but from a pretty intimate knowledge of the general conditions I think I am not far wrong in concluding that the refashioning and reconstruction of old machines, and the repairing of all machines, must furnish employment to as much labor, and call for as much material, as the original construction, and possibly a good deal more. And of course in the matter of tires and inner tubes, which at best have short life, the yearly consumption would be fully twenty times greater on the machines in use than is needed to equip the new machines. Chains, too, come in for rapid wear, and on cars in constant use must be changed frequently. Such supplies as gasoline, oils, grease, carbides, and other materials that disappear with the using, and that run up to an enormous sum of money in a year, play no part in the new motor-car. They, like the chauffeur's salary, figure only in the running expenses.

Starting with a basis of fifty million dollars, or thereabouts, as the selling value of new cars for the present year, it is a fairly reasonable estimate that the total direct income to France from the automobile and from automobiling, including all wages and the value of all materials, would reach up to well nigh two hundred million dollars.

But this great total is merely the direct income of the industry plus the cost of running the machines. It includes not one penny of the vast sum now pouring into France every year, which is superinduced by the automobile, but which is not directly dependent upon the machine itself or its maintenance.

Accurate figures as to this subsidiary amount—money that would never find its way into France were it not for the automobile—are beyond the grasp of the statistician. Even a fairly suggestive estimate would be hopelessly difficult to obtain. If one were to seek the exact truth, he would first have to learn who among the enormous number of people visiting France are there solely because of the automobile, either on their own initiative or that of their family or friends. Next he would have to go the custom-house and ascertain the revenue from the dutiable articles brought in by this automobile contingent, and also the sums received on imported automobiles in use and to be used by these same people. From the custom-house he would have to go to the steamship lines and railways and learn from them the moneys collected for transportation, baggage, and all other expenses from this pleasure-bent army. A yet more important source of information would be the hotels. Here precise statistics from the many hostelries of Paris, great and small, and from the hotels and inns scattered throughout all France, dotting thoroughfares and byways, mountains and seashore, would aggregate an astoundingly large sum. Taxes on automobiles and the license fees for runing them would also be a considerable amount.

Theaters, restaurants, cafes, shops, and farms, the establishments of wine merchants, florists, jewelers, milliners, dressmakers, tailors, trunkmakers, artists, bric-à-brac and furniture dealers—all these, and every other phase of industry, are benefited and enriched by this tremendous accession of tourists.

Travel through France, and everywhere the renovation and refurbishing and refurnishing and general bringing up to date of antiquated and impossible old hotels, speaks eloquently for the automobile, and what it has done for the country. In every little village and town provision is now made for the automobilist, not only in supplies such as gasolene, oils, and tires, but by shopkeepers, hotels and restaurants. The automobile has brought new life and new atmosphere into these dead old places with their grass-grown streets.

The influx of tourists into France has become so great that the hotel capacity of Paris is overtaxed and strained to the point of breaking. This year the city has been so crowded that only a small percentage of visitors could be properly and satisfactorily housed. This is particularly true of the American who seeks and is willing to pay for such luxuries as our best modern hotels furnish at home. Within the last half dozen years great improvements have been made in the old hotels in the way of putting in baths and polishing and painting and modernizing in so far as possible. These changes, however, it is safe to say, would not have gone on to any considerable extent, but for the automobile. There

PROSPECT POINT, VANCOUVERS ISLAND, B. C. MACHINE IN BACKGROUND STANDS ON EDGE OF BLUFF 311 FEET ABOVE THE WATER.

would have been no urgent necessity for them.

Formerly the average American man wasn't especially keen about Paris. The life there, after once seeing it as a matter of curiosity, did not appeal to our temperament. The language and customs were foreign to us. True, a few artists and some others liked the place, but they were in a hopeless minority. It was England, with its similar language and similar people, and with a history in which we are so deeply rooted—it was England that attracted the American man. Switzerland, Germany and other countries were interesting and attractive places for recreation and as a refuge from our hot summers and hard work.

The English lines, which prior to a few years ago almost wholly controlled the better grade of passenger traffic between New York and Europe, did not touch at French ports, and do not today, as to that matter. With the present trend of travel, however, it is a question if they will not soon be forced to do so as a matter of self-preservation, when so many people now prefer going direct to the Continent, cutting out thereby the much dreaded Channel trip from London to Paris. The American Line, which up to a few years ago landed all its passengers at Southampton, now, like the German lines, touches at Cherbourg.

Without knowing the actual statistics, but relying upon observations and a fairly good knowledge of the people who go abroad and where they spend their time, it is safe to say that a great majority of them now land on the Continent instead of on English shores, and of this number who land on the Continent a very large percentage disembark at French ports. Moreover, most of the wealthy or well-to-do people who land elsewhere sooner or later find their way to Paris. This is equally true of those who go direct to England. Whatever country one misses, the one country he does not miss today, if he can help it, is France. This is a very marked change from what was the case a few years ago. An American no longer feels himself a stranger or among strange people in Paris. In summer, when most of our people are there, he meets so many Americans and English on every turn that he feels very much at home, and as if he were among an English-speaking race. And the presence of so many Americans and English in Paris has stimulated the French

to familiarize themselves with our language.

That the automobile has been a chief factor in bringing about this result, which is so benefiting and enriching the French nation, cannot be denied. The men who formerly, with suppressed protests, went to Paris with their wives and daughters, to whom the shops were an irresistible attraction, now go there for their own pleasure.

Everybody, not only from America, but from all the countries of the earth, once in Paris, suddenly finds the automobile spirit getting into his blood. If he has the price he makes the plunge and finds out what automobiling from the inside of the machine is like. And once trying it on French roads, he becomes a sudden and enthusiastic and well sustained convert. The automobile has not only changed the viewpoint of the regular tourists who go abroad —that is to say, those who have been in the habit of going, and who would go if the motor-car had not been invented—it has not only made them devotees of France, but has led a very large army of others to cross over and spend their holidays and leisure months, whether winter or summer, in France—people, I mean, solely induced to do this by the automobile.

And the money this latter contingent take with them is for the most part, or wholly, spent in France. What is true of the Americans is equally true of Englishmen, who now swarm over to France for an automobile run and for a jolly holiday. The Italian, the Russian, the German, the Austrian, and many from the other countries of Europe do likewise. France has become the great summer playground of the world; and not only is it the summer playground, but southern France is the finest winter playground in Europe. This was of course the fact before the advent of the automobile, but the latter has tremendously increased the popularity of the French Riviera, furnishing as it does such an unrivaled means of pleasure.

England and Switzerland were pretty thoroughly traversed prior to the automobile, but France, the country outside of Paris, except for a few watering-places and a few conspicuously well-known places, was little understood and little known, by the American traveler in particular. The automobile gives one real geography—an intimate knowledge of the topography and character and atmosphere of a country which is concrete and everlasting.

I know what all this means, having traversed in its broad lanes the whole country in all sections. A lifetime spent in France railroading from point to point and driving behind horses would not and could not have given me so good an idea of the real France as I now have. City life, yes

FRENCH MOTOR BUS.—*From Motor Age.*

—but the great stretches of fertile fields, and the valleys and the mountains and seashore, the little villages and country homes and country folk, the great waving fields of grain, the fruit orchards, vineyards, and flower gardens—this is the true France, not the boulevards and the boulevardiers of Paris.

The money flowing into France from other sources than their own people, and which is the direct outgrowth of the automobile, goes into such an indefinite diversity of interests and fields of human endeavor that a classification or tabulation of them is impossible. One man might accidentally or otherwise guess more closely than another. I have no idea of the tremendous aggregate, but that it is sufficiently large to make up a total from direct and indirect sources—and in this is included what I have termed the subsidiary income —a grand total of four hundred million dollars annually, I am prepared to believe. At all events, the automobile in half a dozen years has brought to the French people an outlet for its labor, its basic and finished materials, its art and the art creations of the Rue de la Paix, that a hundred years would perhaps have not realized to them except for this invention.

And the reason of all this, next to the automobile itself, is the roads of France, the finest roads the world has ever known. The French government and the French people, realizing what the automobile would certainly mean to them, have had the cleverness and foresight to encourage its use by liberal laws and extreme courtesy—a courtesy on the part of the peasants and people in all stations of life that is at once a surprise and delight to the tourist.

But the value of the automobile as an industry, and in its influence on the trend of travel to France, is in its infancy. Next year more tourists will be in France than any previous season, and in succeeding seasons the tide of travel will for a considerable time continue to rise. No country in recent years has been so well advertised, and it has the merits and the comforts, and yields the pleasures, to hold the people when once they get there and know it as they only can with the aid of the automobile.

As an initiatory advertisement, "The Lightning Conductor," which nearly every one seems to have read, was worth to France a million dollars, perhaps ten times as much. Since that book was issued every one I have ever met abroad has either taken the trip through Touraine and other parts of France, or has lamented his inability to do so. To turn the tide of travel to any one section of the world is something that cannot be done by deliberate purpose and undertaking. It must come from deeper and more fundamental causes than the scheme of statesmanship or organization. But onec flowing into a country, it is apt to remain until other great underlying causes or developments turn it back and aside. France will therefore continue to reap in larger and larger and still larger measure these benefits in the development of which the automobile has been so wonderful a factor, a fundamental factor.

There is a lesson for us here in America to be drawn from the experience of France. To be sure, the conditions are widely different. France had her good roads long prior to the automobile. Their great pioneer builder was Napoleon and no man ever built such roads as he. He set the example which has since been followed with the highest skill and efficiency by the great governmental department, the Ponts et Chaussées, which cares for the highways of France.

France is not divided up into forty-five or fifty independent empires, as is this country. There is a unity of organization there that simplifies things and saves endless controversy and friction. Here there are no two States that have the same automobile laws. If one were to travel in a motor-car throughout our whole Union, he would have to plaster every available inch of space on his car with numbers, and would have to equip himself in the outset with licenses from all these States and Territories, and familiarize himself with the various laws therein. But this is the surface of things. Fundamentally our trouble is in our roads, miserable, inexcusable roads for the most part, for such a great, strong, rich nation as ours. Next to the roads as a difficulty with which the American automobilist must contend is the popular prejudice that he has to encounter—a prejudice, I must say, more or less well founded. But there is no special cause for this prejudice that does not exist in France, and that gets right back to our narrow, dangerous roads.

Give us the great, broad, fine roads of Napoleon, and the keenness of American prejudice against the automobile will largely disappear. This prejudice rests on common sense, and there is no more common sense people in the world than Americans.

On a wide road, if a horse is frightened, the chances of serious accident are so minimized that little alarm would naturally be felt, whereas on a narrow crowning road, with ditches on either side, as is so frequently the case, there is no place of escape for the frightened horse. The accidents from

these frights, the nuisance of dust from our dirt roads, and the general fear of the automobile, have created and engendered the American prejudice. The feeling has been accentuated by the reckless handling of cars by drivers to whom the automobile is still a new toy. This abuse will surely disappear as the machine becomes better understood, and as good judgment and thoughtfulness for the interests and safety of others temper the craze for speed.

That the motor-car has come to stay, there can be no doubt. Give us the broad, fine roads of France, give us uniform laws throughout the whole country, interstate laws, and let them be such as will stand for the best interests of the people, yet at the same time be rational and fair to the automobilist—give us these, and America, I am certain, will become the greatest automobile country of the world, and the greatest summer playground of the world.

We have here a hundred, perhaps five hundred people to one of any other country who can afford to go in for automobiling. We have the money, the temperament, and the country, and though we were a few years behind France in starting, we now have men at the head of the automobile industry who, backed with unlimited capital and the genius for the task in hand, are certain to work out the highest development of the automobile, the top notch of perfection. Give us these good roads, I repeat, accompanied by wise laws, and a hundred million dollars of American money that now goes annually to enrich Europe will remain at home to build bigger and stronger our own great country.

---

## The Defense of the Auto

*From Town Topics.*

I rise in defense of the automobile,
Which I feel is not getting quite a square deal;
It's cartooned, it's lampooned in prose and in rhyme,
In fact some one's digging it all the time.

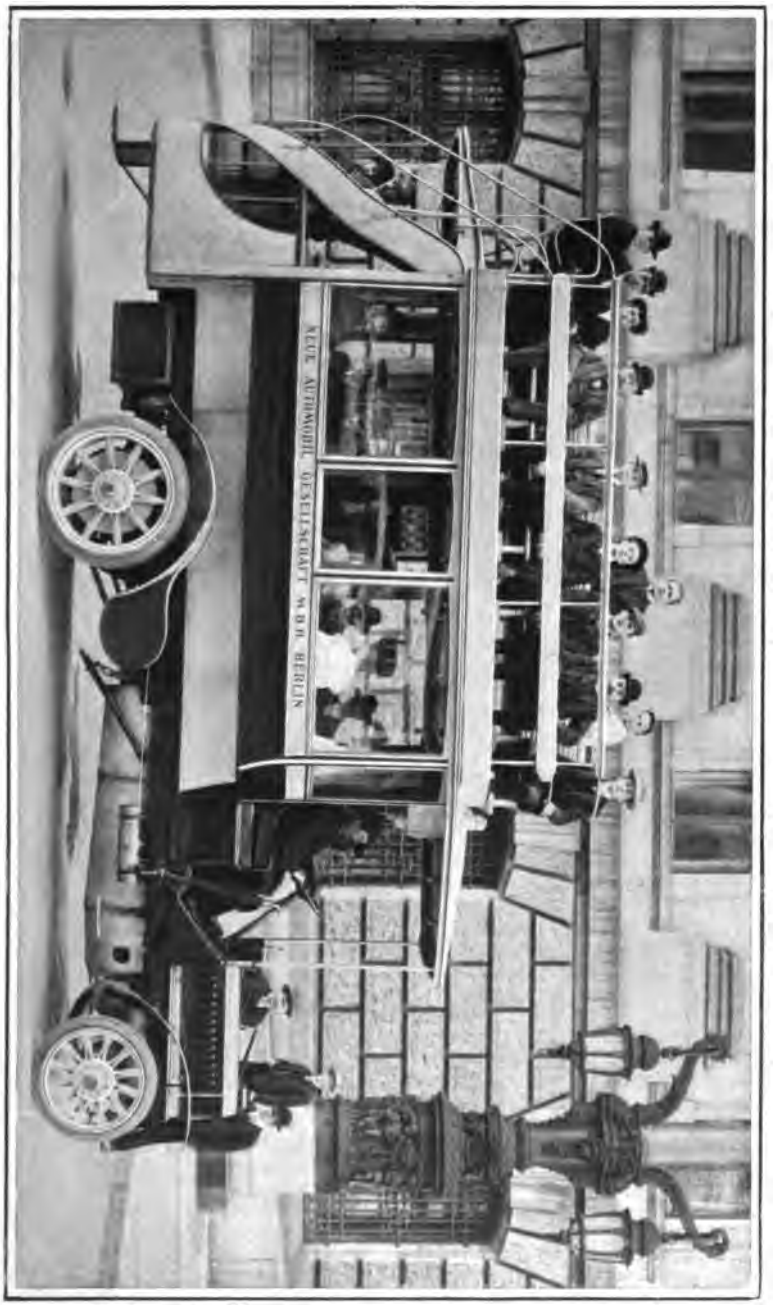
Now an automobile's a decent machine—
As upright and docile as ever was seen;
And, all things considered, it's more than a shame
To call it hard names when it isn't to blame.

Take an auto of looks and goodly repute;
A goggle-eyed, devil-care acting, galoot
Gets in it and recklessly scorches a streak
Full of stifling dust-whirl and gasoline-reek.

He plunges through country, he plunges through town,
And what's in his way, man or beast, he runs down.
His victims, if living, think—maybe they say—
"! ! —— —— ! ! * * * —— —— ! !these automobiles, anyway!"

That's much worse than foolish; it's wrong, very wrong
To fasten the guilt where it doesn't belong;
The automobile, like the nicest of men,
May into bad company get now and then.

*The Chauffeur.*




THE GERMAN MOTOR BUS—*From Motor Age.*

# The Automobile in Country Practice

## Dr. E. E. Moore, tells of His Very Satisfactory Experience with the Motor-Car

*From Horseless Age.*

AFTER four years' experience with the automobile and motorcycle I can say that for ten months in the year at least the horse can be dispensed with in central Pennsylvania.

My experinece has been with gasoline runabouts of the popular curved dash pattern, of which I have owned two and am still using the second machine.

The first model gave excellent service in every way, with the exception of the "water heating system"—for such it proved to be. The water tank was located on the hot end of the engine, with the muffler a close neighbor, and both shut up in the same box, was expected to be kept cool by water circulating through a radiator carefully hidden under the front of the machine, where the cool air could not reach it, and, still further, the pump circulated the water in the very way to keep the engine hot.

My second machine was all that could be desired in the cooling system. The muffler was located outside and below the machine. This system held 6 gallons of water. The radiator was of the flanged tube kind. The circulating pump—cog wheel—delivered the water to the lower part of the radiator, then from the top of the radiator to the top of the cylinder jacket, then down to the water tank. This is a cooling system and very seldom needs any attention, keeping the engine cool on the longest kind of a low gear pull.

To get down to the practical use of the automobile in country practice, the owner must make a careful study of every part of his machine, know when everything is right, and see to it himself that everything is right. He must be able to diagnose the ailment and see personally to the application of the remedy for adjustment or repair. Even in making a slight repair, see that every part is replaced in a proper and secure manner. This will save many a delay, and may even save your life. I know of one case with a machine like my own where some one left out the square key of one rear wheel. Everything seemed all right until the first hill was almost climbed, when the round key sheared off the axle end, and the machine ran back with serious result.

The machine should have a house of its own, if possible heated in winter by steam or hot water. No stove is safe in the same room on account of the gasoline in the tank of the machine. The tank may spring a leak when least expected and start a fire that will burn up everything near; and it will be a question whether your fire insurance policy covers an accident of this kind. If the room is not heated the water must be drawn off at night, to save the engine and radiators. I have tried all the remedies for freezing, and have come down to drawing off the water and when filling up use warm water. This saves a great amount of trouble in starting. The house should be lit with electric light if possible for convenience and safety. Use two lights, one on a long cord fitted with an aluminum reflector, to be used about the machine for repairs or adjustments. Keep the room dark on account of the tires. This will add a little more to their life and durability.

After trying about every kind, I have come to stay for the present with the pneumatic clincher with lugs. The lugs need not be used in the front tires of a light runabout, and it is great help in repairs and replacement not to be bothered with lugs; but they are an absolute necessity in the rear tires on account of the driving and braking on the rear wheels. If they are not used in the rear wheels and the tire becomes deflated from any cause you are in almost certain danger of tearing the inner tube in two pieces. The only way to keep down the tire cost is to use tires of generous diameter to the weight of the machine, run at a reasonable rate on the road, never let the tires be exposed to the hot sun, and keep the weight

of the machine off the tires when not in use. If compelled to stand in the hot sun, cover the exposed tires and protect them from the direct rays of the sun. It will save the cover of the tires and add life to the inner tube. The heat will increase the pressure of the air in the tires to an unnecessary degree and will loosen up a patch that would otherwise give no trouble. Small cuts and scratches can be repaired at once with rubber cement. Larger cuts can be temporarily repaired with outside friction duck. For trouble on the road carry at least one extra inner tube, several strips of rawhide, tire repair outfit, pump and a good folding auto jack. See to a deflated tire at once. If running at night you can at once feel the pull on the steering gear if the trouble is in front, and if the rear tire is down the whirr of the differential will warn you at once. In reference to repairing and retreading tires, send a cover back to be retreaded as soon as you see the very first sign of canvas. If you wait any longer it will be too late. Never send a cover for retreading if the canvas is not safe and strong all over the tire or it will give no service. I certainly feel safer on new cases than old ones retreaded. Look over the tires carefully every trip and pick out any small pieces of sand or stone and fill up the places with thick cement; it will pay you.

Be certain that your engine receives plenty of good oil. Don't be afraid to oil for fear of fouling the spark plug or save money. It is easier to clean the spark plug and also to clean the engine of the extra deposit due to oil than to repair or replace a cut-out cylinder, and it will be cheaper. Use light oil in winter, heavier in summer, and the very best you can buy. My runabout cylinder does good work on four drops a minute, but always turn an extra amount for a long pull on the low gear. This can be done on my machine by simply slanting the oiler valve handle, when four times the usual amount of oil will be dropped. At least every 500 miles the engine should be washed out with coal oil. Use a funnel, with a rubber tube attached, and pour the coal oil into the engine at the spark plug opening and the crank case. Use at least one-half pint. Turn the engine over by hand until the coal oil has reached every part. It will be easier and more thorough if this is used when the engine is warm.

Use heavy gas engine cylinder oil for the transmission and the differential. Keep

A NEW ENGLAND DOCTOR WHO MAKES USE OF A GASOLINE RUNABOUT.—*From Horseless Age.*

out graphite; it is not the proper material for either the transmission or the cylinder of the engine. When you buy a new automobile write at once to the manufacturers in regard to the best kind of lubricating oil suited for the engine they make and send out. Their opinion is valuable. Open the trap door of your engine and satisfy yourself as to the lubrication. Inspect your cylinder. Guess at nothing.

After careful experimenting I have found that gasoline with a minimnm test of 76° gives more power and is more satisfactory in every way. Buy it by the barrel and keep in a metal tank under ground. I get from 20 to 27 miles on a gallon. I have made 31 miles on a gallon where the hills were not steep.

I have tried them all. The best results are obtained from the high grade mica plugs. They stand more oil, heat or soot than any other kind, and they have a longer life. Use chloroform to clean them. Gasoline will also clean the plug. Never use anything like emery paper.

A make of dry cell, with paraffined paper cover, stands the test above every other kind. They have longer life, greater amperage and stand the test better than any I have been able to try. They are fitted with lock nuts, thus preventing loose connections, a common source of trouble. Use two sets of four each, size 2½x6 inches. Keep the good set that will test not less than 16 amperes for the hard work of the engine, and the cells that have seen some service and still test not less than 9 amperes for the light work on the high gear. Keep the spark coil vibrator points clean and adjust them carefully when the engine is running. The commutator must be kept clean and wires tight. Always use two wires to the commutator. The commutator is changed in advancing or retarding the spark so frequently that wires are often broken under the cover and make an annoyance and delay, and are very hard to find when out on a night trip.

From careful observation of runabouts for use in country practice on these roads I feel certain that it is not necessary to buy the high priced machine. The cheaper runabouts like the two I have used will give good service, and are amply strong if used for the purpose intended. They are not high speed machines, but they have all the speed that these roads will permit of, and in fact a high priced machine can get but very little more speed on these roads. A runabout should not be geared too high. My machine is geared 1 to 4, and as I make many trips alone the low gear is not so often called into use, and on account of the low gear it is very easily managed on bad roads, and it certainly is easier on the engine in every way. In keeping down cost of repair it is necessary to exercise continual care in stopping and starting.

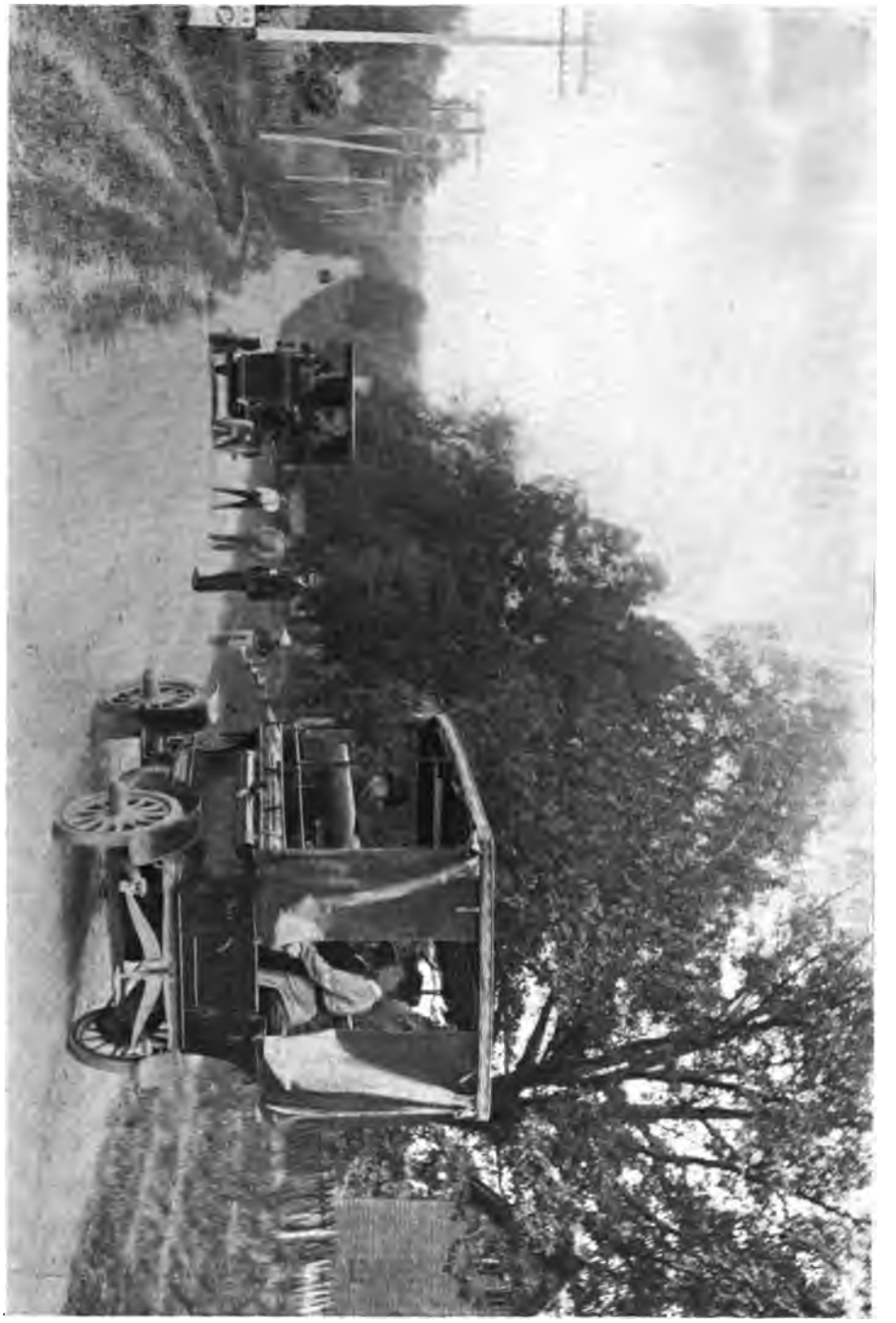
Apply the brake carefully, throw in the clutch slowly and above all do not throw in the clutch when the machine is coasting, for there is danger of breaking chain, transmission or differential; in fact it throws an unfair strain on every important part. This is where care in operation will save money. In the past three years I have traveled almost 30,000 miles in the two runabouts. Each machine came with four new tires, and in addition eight new tires were bought and two cases were retreaded, and at present have four tires in good condition. If you divide the mileage by four sets of tire it will give an estimate of the cost per mile. Then add the cost of retreading two covers, with expressage and rubber cement and repair material in general use.

This mileage cannot be made on any tire with a heavy machine. I feel certain that the long side springs on the particular type of a runabout used had something to do with saving the tires. I have never had an accident to either machine in all my traveling, and this point has kept down expense. These runabouts are particularly adapted for night trips on account of the ease of operation. The tiller steer is not an objection by any means; you know at once by a very slight move of the lever where your front wheels are at, and every controlling lever is right at hand or foot even to starting the engine. To keep down expense it is an absolute necessity to know where you are going at night, for most night calls are emergency calls and demand higher speed.

I sold my first machine for a reasonable sum, and with a modified cooler it is still in daily use and giving entire satisfaction.

Nothing but a leather suit will keep out the cold. The coat should be lined with heavy flannel or, still better, with fur. Goggles are of but little use on account of moisture from the breath. Mica goggles are often a great help in a cold stormy trip. Gauntlet gloves lined with lambs' wool are satisfactory in every way. In addition, to keep warm I have the radiator covered below, and have the floor bored full of holes. This lets the heat up from the radiator under the robe or blanket, and is quite a comfort.

The first thing needed for driving in all kinds of weather and through dust or mud is an apron to protect the machinery. Tarpaulin is the best material, but an apron is a necessity, no matter what material it is made from. Never start out without knowing for certain that the gasoline tank is filled and plenty of lubricating oil in the



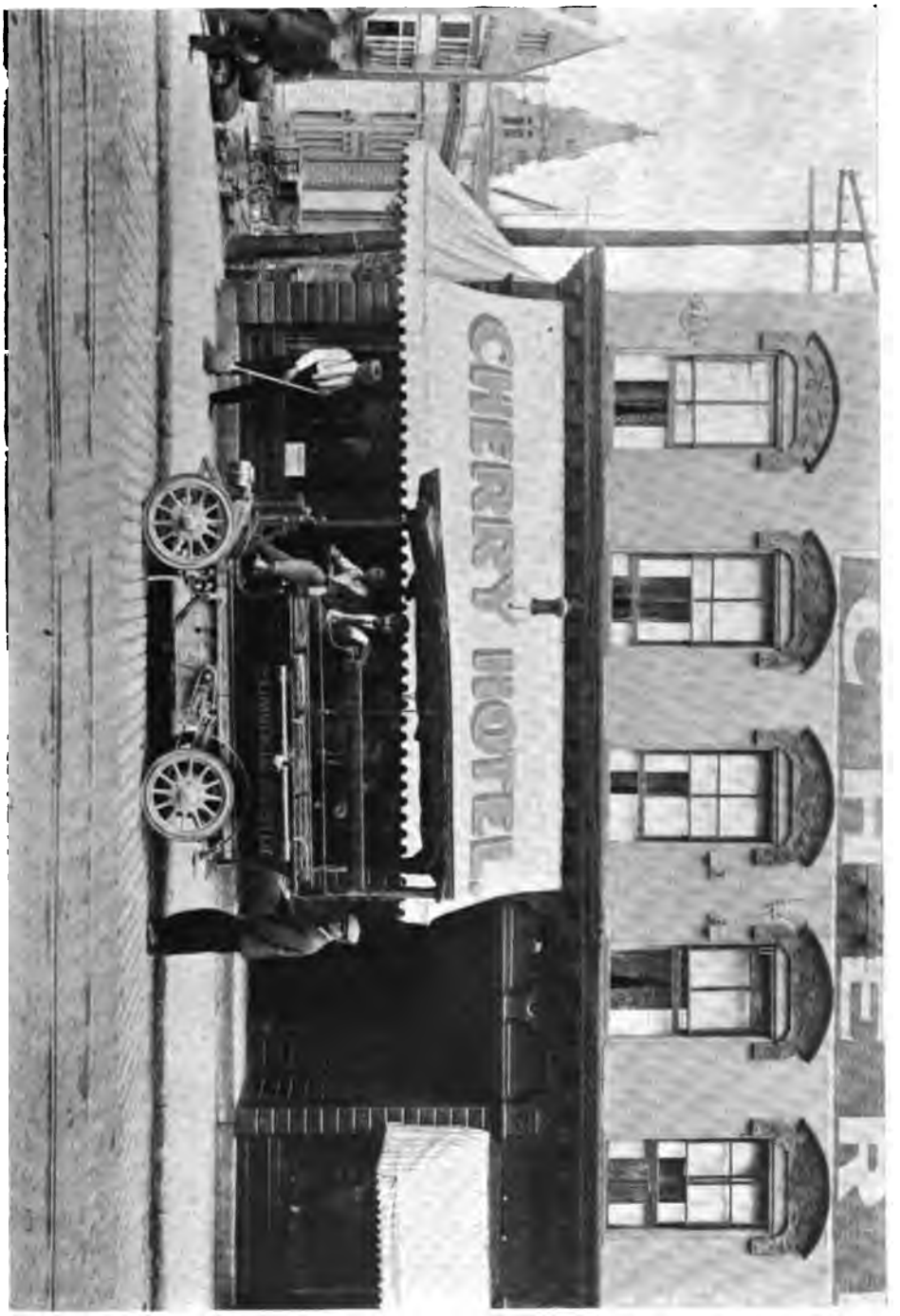
ON A MOTOR BUS ROUTE IN OHIO.

ANOTHER DOCTOR'S MACHINE APPRECIATED BY THE ENTIRE FAMILY.—*From Horseless Age.*

oiler and extra supply along for filling up. Water can be found along the road if you boil out or spring a leak. For night driving two good oil lamps and one gas lamp are necessary. One gas bicycle lamp attached to the steering tiller is a great help; this light is right where you need it whereever the lever is turned. For traction in mud or snow I used pieces of old garden hose, about 8 inches long, threaded with clothes line. Four or five can be tied on each hind wheel in a very short time. I have the ends of the clothes line wrapped with fine twine and then dipped in hot paraffine. This prevents the ends from fraying out. This arrangement will not injure the tire like a chain. Have the engine fitted with a muffler cutout. It will give you more power, less heat to the engine and makes a good alarm on a sharp turn of the road, but can be closed at once when necessary. When on the road do not forget to take care of the scary horse and driver. Stop and lend a helping hand when it is needed, and do so with a kind word. Both you and the driver of the team will feel better.

My runabout starts from the seat, and on this account it is a very easy matter to stop and start the engine, and nearly every horse will pass when the engine is stopped. Carry a good stout rope so that if you have a breakdown it can be used to tow the machine home. So far I have had no use for it only once, and then I was helped out of a snow drift that had been opened only wide enough for sleds. Always carry a can of hand cleaner and a towel, and it will not come amiss to have an extra pair of leather gloves and an overall outfit. These will be needed to keep clean if anything goes wrong on the road. Even if the physician has a few oil spots on his clothes I feel certain they contain fewer germs of disease than dust and dirt from the horse.

In the first place it is a pleasure and recreation to the physician to make his visits with the automobile. He can make better time, longer trips, see more patients and be at home to attend more office practice than would be possible with any number of horses. It is less tiresome in every way than riding with horses. Your country patients appreciate prompt service. The country physician is tied to his work and his vacations are few and far between, and if his traveling is made pleasant and speedy he is getting some vacation right along with his work, and thus enabled to do more work and do it cheerfully. Let any physician look back to a few trips with a horse and buggy on a hot, sultry day, with dusty roads, and contrast the same with traveling by automobile. Contrast the untiring throb of the engine with the heavy, tired breathing of your faithful friend, the horse. They are not to be compared, even if you have no feeling for the faithful animal.




A COMMERCIAL TRANSIT CO.'S BUS STARTING ON ITS REGULAR RUN FROM SPRINGFIELD, OHIO.

# Practical Suggestions

## On How to Prolong the Life of an Automobile

*From Outing.*

IN reply to the question, "How can one get the most enjoyment and wear out of an automobile?" twelve manufacturers answered, "By first knowing the works of your car, and then taking care of them."

The concensus of opinion among them was that when the average man buys a machine, "he asks some bystander to please give the crank a turn," and starts his machine off at a good clip. When the car stops he climbs out, spends an hour puttering around the engine, turning and fussing with what he doesn't know anything about, and, by the time he has discovered that his gasoline tank is empty, he has thrown his engine out of gear. The machine he finds runs, but he does not notice the little rattle and knocking going on below. A few days later the car is "always cranky," and into the repair shop it goes for two days—that time not being necessary for the repairs, but being merely a blind for an exorbitant charge for tightening a few bolts and perhaps putting on a new oil ring. As one Western manufacturer aptly remarked, "We wouldn't need to repair the machinery in a man's car so often if we could tighten up the works in the average autoist's head."

Carelessness and neglect to the motor—the life of an automobile—are fatal. But it is obviously reasonable that a person should be careless when he doesn't know how and why the car runs. A baby who is given a razor to play with and cuts himself cannot be accused of carelessness—still he need not have cut himself had he known how to use the razor.

The first thing to do after you have bought a car should be to go carefully through the factory where the car was made—or some more convenient one—and see the parts made and assembled. Then have an expert mechanic explain to you the working of each part in your own machine, turning the engine over slowly several times. This will give you an idea why certain parts bring their particular result, and will at the same time give you an idea as to how the engine should sound when running properly.

After you have "learned" your engine, study your oiler. Generally speaking cars are made with a forced feeder which should run about thirty or forty drops a minute. If the feed varies, the feeder should be gone over thoroughly. Once a week is not too often to clean an oil feeder, because the oil congeals—even when the oil is strained, as it should always be before run into the oil tank—and foreign matter will work into it and slow up the flow. Another often overlooked "little matter" is an over feed of oil in the engine—this is just as damaging as too little oil. It causes a black, smoky discharge, which, besides being disagreeable to every one on the street, clogs the muffler, smokes up the spark plug, robs the engine of power, causes premature explosion of the mixture and does all manner of damage. Sometimes it seems as though the proper amount of oil is running, but still the engine smokes; this is probably caused by the compression continuing after the engine has stopped, and forcing the flow of oil exactly as though the car were moving. It may readily be prevented by opening the compression relief immediately upon stopping the car and cranking the engine two or three times, thus exhausting the compression in the cylinders. The relief should then be left open until starting the car.

Next in importance is the valve adjustment. Until you have learned the lesson of the engine do not under any circumstance handle the valves, for they are easily thrown out, and a slight displacement will make much unpleasantness. When properly set at the factory they will not need readjustment for months.

Following in importance are the levers controlling spark and gas. A great fraction of the expense of owning a car is located in the hand controlling these two levers, while a little judgment will prevent overheating the motor. The two grips should be worked as near in unison as possible. Do not jerk them around, but

PRIZE WINNER IN WARREN, OHIO, HOME WEEK CELEBRATION.
(SEE DESCRIPTION)

move them steadily forward, thus insuring a proper mixture.

To save racking your car use care in changing gears. Never jump your clutch when traveling at a great speed. Wait until the car is running at a normal rate for the gear on which it is set, then push the clutch steadily, not with a jerk. You may be sure that the crunching and grinding noise made in changing gears is due to jerking the clutch, thus causing the gears to grind together in passing each other.

A thousand and one suggestions regarding care of cars might and will be made from time to time in this department, but the greatest factor in the "keeping young" of a motor is—common sense.

## The Warren Celebration

The accompanying illustration shows first prize winner in the automobile display, Carnival night during the recent Home Week celebration at Warren, Ohio.

The machine is a curved dash runabout temporarily built out in front and a tonneau built on behind. The whole was covered with bunting and presented in appearance, a small touring car. The owner's little son, aged eighteen months apparently managed the wheel steer with great confidence and self-possession. In the tonneau were two little girls aged four years. The owner lay on the foot-mat entirely concealed by the bunting decoration and from there managed the machine, using his knee to control the throttle. The steering was accomplished by means of an eight-inch tilter which temporarily replaced the regular one.

So complete was the whole outfit that many people actually thought the child was in full control. The remarks heard by the owner during the parade were very amusing. The prize was a blue ribbon which may be seen in picture on right arm of the "driver."

## The King Drag

Several months ago we published a very practical article on the use of the split-log drag in road making. This drag is rapidly winning converts in various parts of the country. In a recent issue of the *Auto Advocate,* D. C. Cobb of Milan, Minn., has the following to say in its favor:

"The farmers of our county, our city street commissioner, and many of our citi-

zens are using the King drag on the roads with splendid results. In fact, we have stretches of country roads in our county varying in lengths from one-half to four miles, that are better than our city's asphalt paving, and we have a first-class job. This is the first season the method has been in use. Our farmers are becoming interested, and we hope by another year to have the roads of our county in first-class condition.

"A good earth road must be hard, smooth and oval. The old method of working the roads with the big, four-wheeled road-grader makes the road oval, smooth on the sides only, soft and spongy in the center. The grader pushes the soft, loose dirt to the center of the road. This absorbs the water from the first rain. Travel cuts it up. It dries full of ruts and very rough, in worse condition than it was before the grader was used.

"The new method—dragging with the King road drag after rain—makes the road smooth, it dries hard and is oval. Use the drag after each hard rain while the surface dirt is in a puddled condition. The drag will smear the soft mud over the top of the road bed, in a layer; with sunshine, wind and travel, this layer will become hard. Another dragging will put on another and make the road still harder, smoother and more impervious to rain. In a year or two a surface is put on a road that can hardly be torn up with a pick. The more travel the harder the road. The more rain the smoother the road. With the old method, when the grader is used, the more rain and travel, the deeper the ruts and the rougher the road. The drag works as well on the hills as on the low ground, as well in clay soil as in black earth.

"The expense of running the four-wheeled grader is from nine to twelve dollars a day. It takes six or eight horses and from three to four men. The King drag can be operated by a boy with two horses. The grader can only be used when the roads are dry, a time when farmers have work to do on the farm. With the King drag the best results are had when it is too wet to work on the farm. From one-half to one hour's work after a rain will keep one-half mile of road in splendid condition. Hitch to the drag so that it will pull at an angle of forty-five degrees. Drive slow. Ride, don't walk. You can change the position of the drag by changing your position on the drag. Don't try to move too much dirt.

"The secret of success is to do a little often. Don't plow before dragging—plowing gives a soft foundation. Never mind the ruts. Go ahead and drag; they will disappear."

## Substitute for Gasoline

Geologists tell us that the supply of gasoline is limited; that within a limited space of time it will have become quite exhausted, which means, according to Professor Shaler, that there must be found substitutes for the many derivatives of this useful fluid. The rapidly increasing consumption of gasoline in motor cars, taken together with the portended increase in its cost, makes it imperative for the motorist to look about him for a cheaper fuel for the purpose. The alcohol proposition has been fully expounded from time to time. It is unquestionably but a matter of time, and a very short time, too, before the necessary modifications in carbureter design will have been worked out, and the use of a fluid which may be produced in a variety of ways from several different substances thus made profitable.

Besides this, there is another possible fuel for the explosion motor, which, though it is receiving less attention than the other, is yet, from the present standpoint, no further removed from the car owner. That is the crude, or producer, gas, which is now used quite extensively in large stationary plants, and which, granting the development of an efficient furnace, could be made to produce results almost on a par with those to be obtained from gasoline. While the apparatus as now used for the purpose is rather bulky, its refinement and adaptation to the needs of the motor vehicle would undoubtedly reduce it considerably in size and at the same time increase its efficiency. Its extremely low cost and simplicity in maintainance and operation would seem to particularly recommend it to the commercial types of vehicles even if it were not advantageous to use it in the lighter forms of cars. Several investigators are said to be at work upon the problem of its adoption at the present time, and the result of their efforts will naturally be awaited with interest.

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A marked improvement has been shown recently in the conduct of reckless automobilists in northeastern Massachusetts, which is due to a prominent motorist in Manchester, Mass. This gentleman is an enthusiastic automobilist, but he has had the courage to get after all reckless cases, regardless of whose toes he treads upon. His method of procedure is unique. He observes a case of intemperate driving, takes the man's number, has a warrant issued and presses the charge himself, using his every influence to have the extreme penalty administered. He has made many enemies, but has made friends among sane drivers and the public—and deservedly.

# The How and Why of the Automobile

A SERIES OF PRACTICAL LESSONS

*By Fay L. Faurote*

*(Continued from November issue*)*

## IGNITION.

IN taking up the subject of Ignition the writer will not attempt to define the word "electricity;" neither will he go into the theory of the whys and wherefores of this mysterious agent. He will, however, attempt to define, in simple language, some of the terms used in connection with electrical measurements.

**ELECTRICAL UNITS.**—The flow of the electric current may, in many ways be compared with the flow of liquids, for instance, supposing we consider two systems, running side by side, one a wire carrying a current of electricity, the other a pipe carrying a certain amount of water. In the first place, the pressure will depend, in the case of water, upon the difference in level between the upper and lower end of the pipe. In the case of the electric current, it will be measured by the difference in potential, as it is technically called, between the source of supply and the point at which the reading is

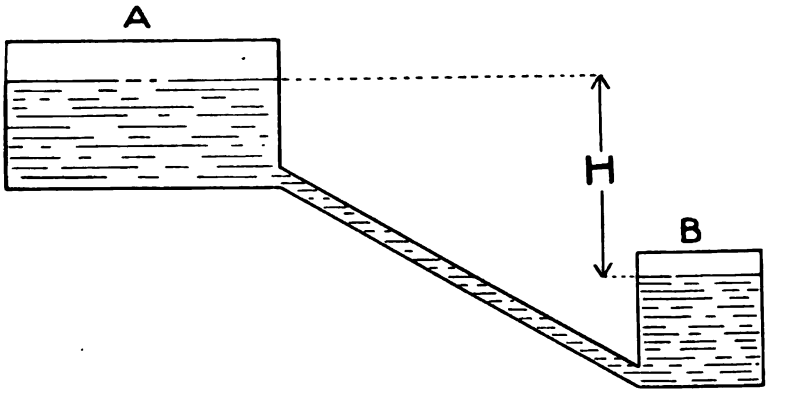


FIGURE 55.

taken. Thus you can imagine that a dynamo or battery might represent a large body of water placed at a higher level than the point under consideration. Naturally, the flow then would be in the direction of the lower point, and the pressure and rate of flow would be proportional to the distance between the upper and lower levels. While these analogies are not strictly true, yet at the same time very good ideas may be formed of the flow of an electric current by such comparison. Likewise, the amount of current flowing, or

*This valuable series began in the March issue, back numbers will be sent upon receipt of regular price.

the rate of flow, as it is commonly called, may be compared to the amount of water flowing out of the pipe in a given length of time. Another unit of measurement used in electricity is the unit of resistance, this, of course, being very similar to the frictional resistance found in water pipes. The following table will help to keep in mind the various units and their similarity to those used in hydraulic measurements.

Volt—Unit of Pressure—Caused by difference in potential.

Pounds per square inch—Unit of pressure—Caused by difference in level.

Ampere—Unit of rate of flow—Dependent upon voltage and resistance.

Gallons per minute—Unit of rate of flow—Depending upon pressure and frictional resistance.

Ohm—Unit of resistance—Depending upon diameter, material and length of wire.

Co-efficient of friction—Unit of resistance—Depending upon diameter, material and length of pipe.

These relations as before mentioned, are not strictly true yet at the same time they are given in hope that they will give the reader a somewhat clearer idea of the meaning of these electric units.

In any case, where there is no self induction (this term will be explained later) the relations existing between these units may be expressed as follows: The voltage is equal to the resistance multiplied by the amperage or in other

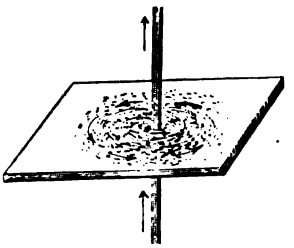

FIGURE 56.

words, the resistance will be found equal to, the voltage divided by the amperage.

Another relation which may possibly prove interesting is that voltage multiplied by amperage, is equal to watts, the watt being the unit of power.

Volts multiplied by amperes equals watts.

746 watts equals one horse power, or 33,000 foot pounds per minute.

Thus, you can see, that electrical power may very easily be reduced to a mechanical equivalent or vice versa. This relation should be remembered, as later on it will be again used when the question of horse power determinations is taken up.

The only other characteristic of an electric current which we shall attempt to consider, is that of induction. Physicists have found that by passing an electric current through a wire, a certain effect is produced in the ether surrounding it. This may be easily shown by passing a wire through a cardboard upon which has been sifted a few iron filings. As soon as the current is turned on, these filings will arrange themselves in various shapes, showing

very plainly that a "magnetic field" has been created. Other scientists found that by winding this wire into the form of a helix that a field of a different form was created. In addition to this they found that a bar of iron placed in the center of the helix would concentrate this magnetic field and make it stronger inside the coil. They also discovered that the iron itself became magnetized; one end became what was called a positive pole, the other a negative pole, this nomenclature arising from the fact that certain electrified bodies were repelled by one end, attracted by the other.

Another curious fact which was later evolved was that upon winding another coil of wire around the first one that every make and break of the

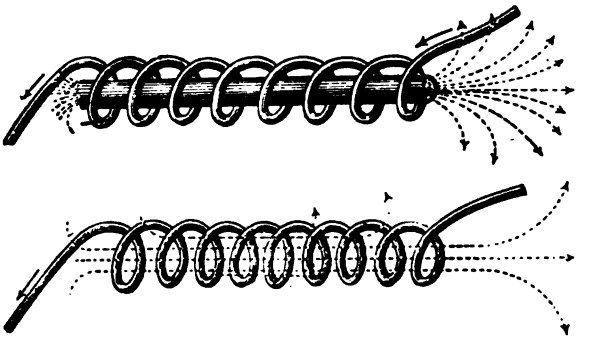

FIGURE 57.

current in this first, or primary coil, as it is called, produced a current in the outside or secondary coil. This quality of the electric current is what is known as induction. A clear idea of this may be obtained by imagining something like this: Consider a body of water in the center of which there is a large open space, and around it, placed at regular intervals, a number of posts projecting above the surface of the water. Now, let us drop some

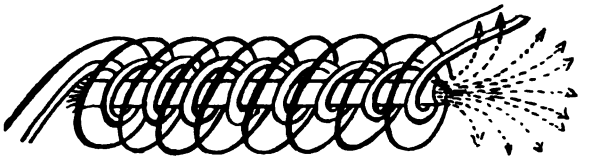

FIGURE 58.

heavy object in the center of the open space, thereby creating a number of large waves radiating from this point. If you will note the progress of the various rings carefully, you will see that a wave striking one of the smaller posts is immediately broken up, and a set of ring waves begin to emanate from each post; all of the energy of the large wave having been divided up into a great number of smaller rings. Now, if you can conceive that a similar action has taken place in the ether about the electrical conductor you can form some idea of the meaning of electrical induction.

**SOURCES OF ELECTRICITY.**—Although there are several ways of producing an electric current yet the two methods now in general use are by chemical action, and the direct conversion of mechanical energy into elec-

tricity. Under chemical action comes the ordinary galvanic cell, dry cell and storage battery. Under the second heading may be classed dynamos and magnetos.

The wet and dry cells produce an electric current by chemical action, while the storage cell simply acts as a reservoir for a certain amount of electrical energy, the ingress and egress of which is accompanied by chemical action.

The simplest form of an electric cell consists of two elements such as carbon and zinc, or zinc and copper, immersed in a bath of an exciting fluid such as sulphuric acid and water.

The dry cell is a slightly modified form put up in such a way that the contents will not spill. The elements ordinarily used in this form of cell

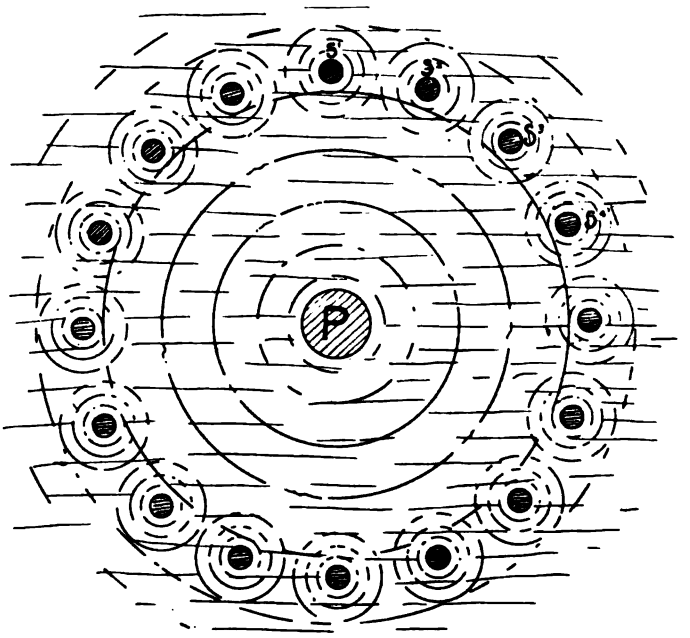


FIGURE 59.

are carbon and zinc, the walls of the cell furnishing the zinc element, and the carbon stick in the center the other.

The exciting fluid or "electrolyte" is a mixture of ammonium chloride (sal ammoniac) and water; this is usually mixed with plaster of paris in order to make it a semi-fluid mass. In addition to this a mixture of carbon dust and black oxide of manganese is put in, which acts as a "depolarizer." This last addition is necessary for the reason that when two elements are immersed in the exciting fluid, a chemical action immediately begins to dissolve the zinc, and the result is that free hydrogen gas is liberated at the carbon element. If this is allowed to accumulate it soon covers the surface

of the element, and interferes very materially with the action of the cell. This is called polarization. In order to overcome this effect, black oxide of manga-

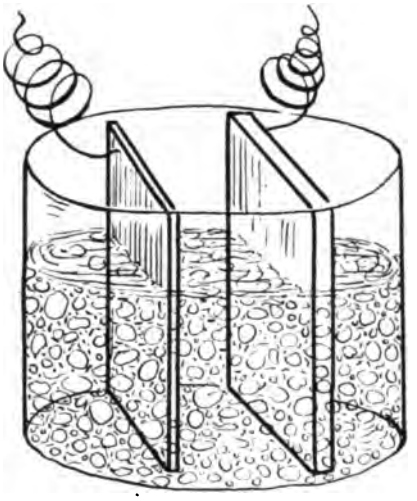

FIGURE 60.

nese is introduced. It has a very strong affinity for hydrogen, and therefore prevents the hydrogen from forming in very large quantities.

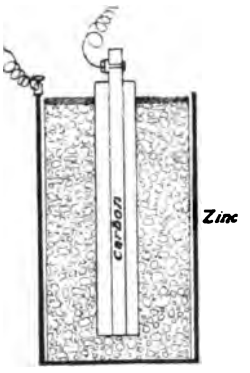


FIGURE 61.

One formula used in making up dry cells is as follows:

¼ pound zinc oxide.
¼ pound sal ammoniac.
¾ pound plaster of paris.
¼ pound chloride zinc.

Mixed to a consistency of paste by adding one-half pint of water.

This mixture is packed in closely around the carbon stick, and the whole cell is covered with tar or paraffine.

*(To be continued.)*

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## Among the Clubs

The Atlanta Automobile Association has been organized in Atlanta, Ga., by local motorists, who elected J. P. Stevens, president; J. N. Nunnally, vice-president, and Charles Elyea, secretary and treasurer. The officers and Dr. F. W. McRae, W. H. Kiser, Reuben Arnold, C. H. Johnson, E. H. Hinman, H. M. Ashe and R. L. Cooney, form the Board of Directors.

An historical pamphlet has been issued by the Long Island Automobile Club, with headquarters at 360 Cumberland street, Brooklyn, N. Y. The club was founded in October, 1900, by four motor car enthusiasts, and is now claimed to be the second largest in the United States. Alfred Wilmarth is the president; August Post, vice-president; Frank L. Evans, secretary, and Raymond Healy, treasurer.

Dr. B. J. Baldwin has been elected president of the Montgomery Automobile Club, of Montgomery, Ala.

It was recently announced by Treasurer Samuel G. Buckbee, of the committee of good roads of the Automobile Club of California, that the $35,000 which the committee is trying to raise for the building of the boulevard to the county road through San Mateo county, has almost all been subscribed, more than $31,500 having been collected.

The following officers have been elected by the Milwaukee Automobile Club: President, Sherburn M. Becker; first vice-president, Dr. Louis Fuldner; second vice-president, F. G. Curtis; secretary, James T. Drought; treasurer, William H. Pipkorn; S. M. Becker, James T. Drought and Dr. Louis Fuldner were chosen as directors for three years; W. H. Pipkorn, F. G. Curtis and H. H. Rice for two years, and Dr. Lewis Sherman, J. R. Barthelet and C. I. Drake for one year.

The following officers were elected at the annual meeting of the Automobile Club of America: President, Dave H. Morris; first vice-president, Colgate Hoyt; second vice-president, Frederick G. Bourne; third vice-president, Gen. George Moore Smith; treasurer, W. S. Fanshawe; governors, Col. John Jacob Astor, George F. Chamberlain, Schuyler Skaats Wheeler, Wm. Pierson Hamilton and John W. Borne.

At the annual meeting of the Automobile Club of Seattle, Wash., the following officers were elected: President, Alfred Battle; vice-president, Alfred Latimer; secretary-treasurer, F. R. Seymour; directors, the officers, A. S. Kerry and Walter S. Foster. A new committee to look after the city streets was created. The most important announcement was that the club had procured one thousand signboards to be erected throughout the State.

The annual election of officers of the Chicago Automobile Club was held at the club house on November 9 and the regular ticket was unanimously chosen, no opposition candidate being placed. The following officers were elected: President, John Farson; first vice-president, Allen S. Ray; second vice-president, B. H. Marshall; secretary, S. S. Gorham; treasurer, T. J. Hyman. The directors chosen were: Ira M. Cobe, Robert Tarrant, Jr., F. C. Donald, N. H. Van Sicklen, Jerome A. Ellis and Charles E. Gregory.

## A New Pastime

It is not a crime to shoot at automobiles in northern Illinois, provided you do not hit any of the occupants of the car. Such seems to be the gist of the decision of the Grand Jury which had before it for consideration the case of an Evanston policeman who stopped an automobile by shooting at it, and puncturing the tire. This officer was held in $5,000 bonds July 28, but the Grand Jury reported that no bill will be returned against him. This seems to establish a precedent which will bear watching with some attention. If it is not criminal to shoot at tires, would it be equally blameless to shoot at the gasoline tank when exposed? There are several points of attack more or less vulnerable, and a good marksman might have some lively sport in wing shooting, provided the law properly backed him up. But if tire shooting is to be legalized there ought at least to be a closed season on the sport. Otherwise the "game" will be exterminated. The question arises: Suppose an officer misses the tire, but hits the driver, what form would the charge against him take—if there were any charge? As a matter of fact, an automobile tire hit by a bullet and punctured might cause an accident that would result very seriously.

# Diamond
# Sidewire Solid Tires

FOR Trucks and Commercial Vehicles---Conceded To Be The Best Motor Truck Tire On The Market To-day.

The Rubber is strictly Our Own Stock. It has never been duplicated and Frequent Attempts at imitation have but emphasized Diamond Superiority.

## THE DIAMOND RUBBER CO.

**AKRON, - OHIO.**

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# OLDSMOBILE

## MODEL S

## Palace Touring Car

Following our general announcement of last month, we here set forth in detail the leading features of our Palace Four-cylinder Touring Car.

In general appearance this car is strictly up-to-date. The front axle has been placed well forward under the radiator, giving a wheel base of 106 inches.

The tread is standard. The general design of the car is such that the tendency to stir up dust when running is very small. Weight of car 2200 pounds.

### PRICE, $2250

**MOTOR:** The car is equipped with a four-cylinder vertical water-cooled motor, developing 24 to 26 H. P. Cylinder, 4¼ inch bore by 4¾ inch stroke. Pistons are carefully grounded, and "run in" with a belt to insure accurate fit. All the cylinders, pistons and rings are made from the best grade of cast iron from our own foundry. An exceptionally silent muffler is arranged longitudinally beneath the side of the car.

**VALVES:** The valves are mechanically operated and easily adjusted. The fly wheel is carefully marked, and an index is placed on the crank case so that the valves may be quickly and accurately timed. All bearings are of generous proportion, and quarter boxes are of babbitt-lined bronze. The cylinders are cooled by means of water circulated by a gear pump. The radiator used is one of our own design, with a flat tube construction. A fan placed just behind the radiator aids in cooling the motor when the machine is standing still.

# OLDSMOBILE

**CRANK CASE:** The crank case is of aluminum. The lower half may be removed without disturbing the bearings, which are hung from the upper half of the case. The crank shaft, connecting rods and pistons can, therefore, be very easily examined or removed without disturbing the hanging of the motor.

**FRAME:** A pressed steel frame of channel section is used. In addition to the main frame, a sub-frame is provided which supports the motor and radiator. A portion of the dust pan which runs under the car is riveted between the outside and inside members, and gives a pronounced bracing effect. A portion of the dust pan is removable, so that the motor may be very easily examined, yet at the same time it is firmly fastened when in place and absolutely prevents the dust, mud and water from reaching the working parts of the mechanism. Both engine and transmission are aligned upon the sub-frame, and all working parts may be removed without disturbing the hanging of the crank, or transmission cases.

**TRANSMISSION:** The transmission is of the sliding gear type, having three speeds forward and one reverse. All the gears are made of special high carbon steel, tempered and hardened. The control is of the selective type, all changes being made with one lever.

The clutch is of the "dish pan" or cone type, and is provided with a simple spring device whereby the load may be thrown on the motor gradually, thus doing away with any jerking motion when starting. The clutch may be thrown out by foot lever, and also by emergency brake lever.

**CONTROL:** Steering is accomplished through a worm and nut mechanism. The nut has a large wearing surface so babbitted that the same may be easily replaced at any time. The spark and throttle levers are placed upon the steering post, and just beneath and at the right-hand side of a 16-inch oval-rim steering wheel. An accelerator pedal is also arranged in such a way that it may be used with ease when it is desired to instantly increase the speed for a short interval.

**BRAKE:** There are three brakes; one, operated by a pedal control, acting on the cardan shaft, just back of the transmission case; the others operated by a hand lever, which "sets up" the emergency toggle joint brake upon the rear wheels. Application of this latter brake throws out clutch, disconnecting transmission from motor.

**AXLES:** The front axle is of our own special design, and is built of 2-inch tubing, having a ¼-inch wall. The steering connections have special large bearings, all these bearings being equipped with "T" handled grease cups, and protected by leather dust caps. The steering connections and gear links are adjustable so that the wheels may be easily lined up at any time. Axle is dropped in center to protect the fly wheel and other parts beneath the car. The rear axle is equipped with Timken roller bearings throughout.

**DRIVE:** Bevel gear drive is used, having a ratio of 3 to 1. All chain trouble is illiminated and the greatest efficiency obtained.

**SPRINGS:** Large, half-elliptical springs, made of the best stock obtainable are used, the front being 36 inches long, and rear 48 inches.

**MISCELLANEOUS:** The wheels have ten spokes in front, and twelve in rear, and are equipped with 32-inch by 3½-inch tires. Four-inch tires for extraordinary service can be had on special order. Running board and mud guard irons, instead of being riveted on are drawn into taper sockets upon side members of frame and are easily removable. The lamp brackets are adjustable for different sizes of lamps; dash and tail light brackets are supplied. Luggage rack is equipped at rear on special order. A tubular horn, two acetylene lamps, generator and two oil lamps are furnished with each car. A box carried on running board contains storage and dry cells, tools and compartment for waste and small repairs.

## OLDS MOTOR WORKS

LANSING, MICH., U. S. A.

# MOBILOIL

For Superheated Steam Cylinders | For Ordinary Steam Cylinders | For Air Cooled Cylinders | For Water Cooled Cylinders

**FOR SALE IN EVERY PART OF THE WORLD**

**Manufactured Only By**

## VACUUM OIL COMPANY, Rochester, N. Y.

# PERFECT-IGNITION

**AND**

# SPLITDORF

**Go Hand in Hand**

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**Our References are the Innumerable Thousands of Automobiles and Motor Craft in constant use the world over.**

**Don't be content with what we tell you as "actions speak louder than words." Our "coils are our actions."**

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## C. F. SPLITDORF

**17-27 Vandewater St.** **NEW YORK**

ROLL ON

# Hyatt Rollers

And you will take no one's dust, nor decorate the roadside looking for bearing trouble . . Eighty per cent of all nineteen hundred and five cars selling at a thousand dollars or less are equipped with Hyatt Roller Bearings on rear axles . . .

**Hyatt Roller Bearing Co.**

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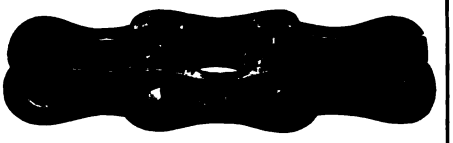
QUALITY OF

# Diamond Chains



The steel in DIAMOND chains is of special analysis. No shipment of material is accepted until it has been thoroughly tested in all stages of manufacture. Replace your worn out chain with a "Diamond" which fits any standard sprocket.

TRADE ◇ MARK.

**Diamond Chain & Mfg. Co.**

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**A SPECIAL MESSAGE**—We have a special message of interest to every owner of an Oldsmobile purchased before 1905. Your name on a postal card will bring it.

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Our new No. 14 plug

HAS THE HABIT

STA-RITE "STAYS RIGHT THE LONGEST"

of not being touched for six months and more on an Oldsmobile and some other cars. Its **$1.50.**

25 sizes in Sta-Rites. Porcelain and Mica.

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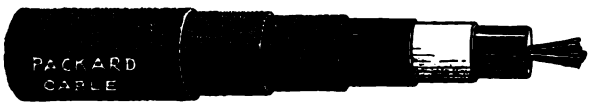
## A LOOK IN ADVANCE

Do not wait until an accident happens before learning why it occurred. Study the mechanism of your machine and watch for those things which lead up to such disasters. There is no other book published that can so fully inform you and help you as Homans' Automobile Educator. Sent postpaid upon receipt of $2.00,

THEO. AUDEL & CO.,

63-5TH AVENUE, - - - NEW YORK CITY

**Did you ever enjoy** being caught out in a hard rain, and just as you began to think there was some prospect of reaching shelter, have the cable begin to leak and stop your engine?

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will cheat you out of these good times, but such sacrifices are easy to bear.

Our 1906 proposition will surely interest you.

**THP EACKARD ELECTRIC COMPANY,** WARREN, OHIO

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¶ You will find in our line the vehicle which most fully meets your requirements whether for city or country delivery, light trucking, city or rural transportation, depot or park service.

¶ Write us for detailed information. There is a big money to be made with our commercial cars and it will pay you to get in the game earily. Ask for Circular 50.

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# Olds Motor Works

*Member Association of Licensed Automobile Manufacturers.*

**LANSING, MICH., U. S. A.**

# The Finish of Your Auto

**will stand WEAR AND WEATHER if its the**

# Acme Automobile Method

"Acme Automobile Method" of finishing consists of the finest materials specially adapted to withstand the exposure, wiping, oil, grease, dust and steam to which it is necessarily subjected. It's not only the materials, but the method of application that insures superior results as compared with ordinary materials and methods. There is small satisfaction in owning a fine auto that appears shabby, due to defective finish.

The "Acme Automobile Method" of finishing costs no more than others.

MADE BY THE Acme PAINTS, ENAMELS COLORS, VARNISHES DETROIT, MICH.

**PICKING UP NAILS DOES NOT BOTHER YOU IF YOU ARE USING**

## "Swinehart Tires"

**ELIMINATE YOUR TIRE TROUBLE AND YOU HAVE NOTHING BUT UNALLOYED PLEASURE LEFT**

**Write for Catalog No 5**

## The Swinehart Clincher Tire & Rubber Co.

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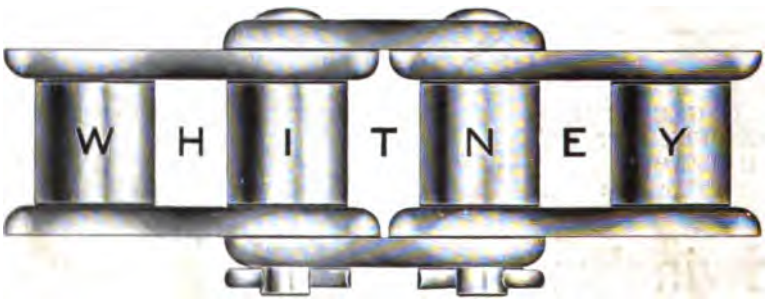
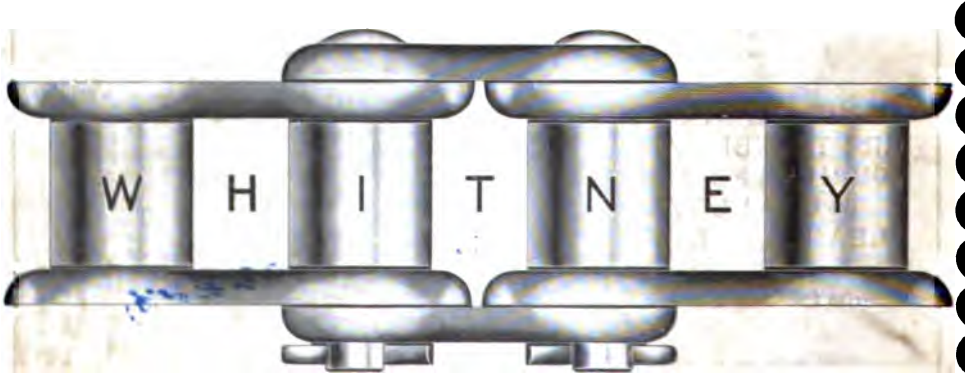
# WHITNEY CHAINS 1906 MODELS.

"Whitney" Roller Chain DETACHABLE Type Patented

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